SUPPORT NETWORK RESOURCES OF SINGLE ADOLESCENT MOTHERS AND DEVELOPMENT OF THEIR HIGH-RISK INFANTS

BY

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Abstract of Dissertation Presented to the Graduate Council of the University of Florida in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

SUPPORT NETWORK RESOURCES OF SINGLE ADOLESCENT MOTHERS AND DEVELOPMENT OF THEIR HIGH-RISK INFANTS

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The purpose of this study was to examine the association between measures of support network resources of single adolescent mothers and the Bayley scores of Mental and Psychomotor development attained by their infants at 12 months of age.

The theoretical framework for this research originated from Bronfenbrenner's theory of ecological human development. Bronfenbrenner, along with recent theorists Cochran and Brassard, in 1979 proposed that social support might be associated with qualitative child development. This research was an exploratory study of this proposed relationship.

Four hypotheses were tested, utilizing data from the Children's Developmental Clinic at Shands Teaching Hospital, University of Florida. Subjects were 35 mother-infant dyads. The factors of marital status, socioeconomic status, infant's birth orther, and neonatal condition of the infant were controlled for. All infants

were classified as high-risk due to low birthweights. Measures of social support were obtained through a sociodemographic questionnaire completed by the mothers. The infants' scores on the Bayley Scales of Infant Development, Cognitive and Psychomotor Index, were used as the dependent variables in the study.

Four measures of social support of the single adolescent mothers were studied in relationship to scores attained by their infants on the Bayley Scales of Mental and Psychomotor Development. Measures of maternal social support were not associated significantly with measures of infant development. Measures of the mother's perception of her social support were associated significantly with the infant's scores on the psychomotor index.

In summary, this exploratory study showed little association between measures of social support of single adolescent mothers and measures of their infants' cognitive and psychomotor development at 12 months of age. The results suggested there is an association between the mother's perception of her support and the psychomotor development of her infant. These results indicated a need for further research as related to factors that influence the mother's perception of her social support.

CHAPTER I
INTRODUCTION

Overview of Adolescent Pregnancy

Considerable impetus on the study of the family network as a factor in child development is encouraged by the research of Bronfenbrenner (1974, 1979). More recently, Powell (1979) and Cochran and Brassard (1979) have proposed theoretical frameworks for networking as an important contributor to the qualitative development in young children. This study addresses the relationship between measures of support network resources of single adolescent mothers and the qualitative development of their infants at 12 months of age, as measured by the Bayley Scales of Mental and Psychomotor Development.

The occurrence of adolescent pregnancy and consequent parenthood has risen dramatically in the past decade (Guttmacher, 1976, 1981). The proportion of births to adolescent mothers as compared to adult mothers is currently a major national concern (Scott, 1981). While births to adult women continue to decline, the rate of adolescent pregnancy and childbirth continues to remain at a high level. In the case of very young mothers (10 to 14 years of age) the rate of adolescent pregnancy has increased noticeably in the past decade. Compared to white females, black females maintained a high rate of adolescent pregnancy in the past decade while the rate of adolescent pregnancy for white females doubled during the 1970's (Guttmacher,

1981). Clearly, adolescent pregnancy presents a complex and challenging research topic.

The consequences of adolescent pregnancy are far-reaching. Not only does the young female experience accelerated role transition (Bacon, 1974), but the consequences for the infant born to a very young mother are of major concern to medical researchers. Numerous studies document that pregnant adolescent females drop out of school, have higher divorce rates, lower earning potential, higher rates of child abuse, and, in general, more limited and long-term goal setting opportunities (Furstenberg, 1976; Guttmacher, 1976, 1981).

The outcomes for the infants born to these very young mothers are also well-documented. Adolescent mothers have higher incidences of premature delivery, increased neonatal complications, and higher infant mortality rates (Field, 1981; Monkus, 1981; Oppel and Royston, 1971; and Quay, 1981). This is especially true for the younger adolescent mother, from 10 to 14 years of age (Field, 1981). Increasingly, researchers are focusing on the medical, social, psychological, and physical consequences of adolescent pregnancy. The adolescent mother population presents many unanswered research questions and problems. This study addresses this unique population and the possible relationship between support networks of adolescent mothers and the qualitative development of their infants.

Keniston (1977) indicates that the perception that adequate families are independent, autonomous, self-sufficient units that insulate their members from external pressures has been challenged. The concept of the extended family network is hardly a new one, especially to sociologists. However, the qualitative and quantitative

investigation of the social support system or network as it relates to the development of young children who transact within the framework of that support network is a new and fertile area for research.

Bronfenbrenner's (1974) ecological theory and model of child development characterizes the family as a system, influenced by various neighborhood groups, community agencies, voluntary associations, government offices and policies, as well as by broad cultural, ideological, and political systems. While the concept of support networks is utilized as a part of the system's theory, relatively few investigators have linked systems of support (or networking) to the family's qualitative growth and development, especially in relation to the specific measures of infant cognitive, social, and physical development.

According to Powell (1979), social networks may enhance a family's childrearing processes by providing material, psychological, and emotional support and by sharing information and reinforcing accepted beliefs and behaviors that socialize adults into the parenting role. Cochran and Brassard (1979) argue that the members of the parents' social support network influence the child's development indirectly by their more direct influence on the parent. Transactions and interchanges that occur frequently between members of the same network are more likely to enhance parent functioning and children's development.

Cannon-Bonventre and Kahn (1979) found that teenage parents rely on informal social networks to meet a range of material needs, including money, housing, furniture, food, clothing, and medical assistance. Similar studies on the use of support network systems by young

parents have been conducted by Epstein (1980) and Zitner and Miller (1980). Stolz (1967) found that parents used a variety of resources for child development information, though the principal sources were interpersonal in nature. Epstein (1980) found that teenage mothers who are coping well with parenting roles attribute their success to someone who taught them to "negotiate the system" of available information and support systems. Egeland, Breitenbucher, and Deinard (1980) found that low-income teenage mothers rated as giving excellent care to their infants obtained most of their child development information from relatives and their own childhood experiences. In a nationwide survey of parents, including high-risk and teenage mothers, Sparling, Lowman, Lewis, and Bartel (1978) found that there was a strong preference of parents for interpersonal sources of information, followed by print and audiovisual media sources. McKinlay (1973) reported that networks appear to exert restrictive as well as enabling influences, depending upon their characteristics.

The literature has supported the idea that parents do not rear children in a social vacuum. Social relationships may be particularly critical in the learning of parenting or acquisition of parenting skills across the individual's lifespan. However, there have been little data to support this speculation. Connectedness to others has seemed to be associated with healthy family functioning. Parents who have exhibited more problematic patterns of interaction, such as abuse, have been more likely to be socially isolated. The study of support networks utilized by parents has furthered our understanding of forces that enhance parenting skills.

Questions Raised by the Research

The research literature supports the notion that support networks are utilized by parents. Since the adolescent mother represents a unique population, there is a need to study ways in which social support networks affect the lives of adolescent mothers and their offspring. Specifically, there is a need to investigate possible relationships between the nature and utilization of the adolescent mother's social support network and quantitative measures of her infant's cognitive and psychomotor development. Several research questions are posed.

1) What types of social support resources constitute the adolescent mother's support network?

2) With what frequency does the adolescent mother interact with and rely upon her support network?

3) What role does the social support network play in times of crisis for the adolescent mother and her offspring?

4) How do adolescent mothers perceive their social support networks?

5) How accessible are adolescent mothers to their support networks?

6) What social, religious, educational, and political organization play a role in the adolescent mother's support network?

7) Are social networks of adolescent mothers related to the quality of their infants' development?

The Purpose of the Study

The purpose of this study was to investigate 1) the types of support resources that make up the adolescent mother's support network and the frequency with which she utilizes the support resources, 2) the correlation of four specific indicators of support in relation to her infant's mental and psychomotor development scores on the Bayley Scales of Infant Development at 12 months of age, and 3) measures a self-concept and life stress of the adolescent mothers.

Hypotheses to be Studied

Hypothesis I. There will be no significant linear relationship between measures of in-hospital communication efforts by members of the support network and the Bayley scores of Mental and Psychomotor Development of the infants at 12 months of age.

Hypothesis II. There will be no significant linear relationship between measures of the adolescent mother's accessibility to her support network resources and the Bayley scores of Mental and Psychomotor Development of the infants at 12 months of age.

Hypothesis III. There will be no significant linear relationship between measures of actual support network resources of the adolescent mother and the Bayley scores of Mental and Psychomotor Development of the infants at 12 months of age.

Hypothesis IV. There will be no significant linear relationship between measures of the mother's perception of her support network and the Bayley scores of Mental and Psychomotor Development of the infants at 12 months of age.

Definition of Terms

Single Adolescent Mother--an adolescent mother, under the age of 20, who has never been married or is separated or divorced. None of the subjects are married at the time of the data collection and all are lower socioeconomic status subjects.

High-Risk Infant--an infant who was placed in the Neonatal Intensive Care Unit (NICU) at birth, due to neonatal low birthweight or prematurity. All infants in this study were classified as "at risk" at birth. Babies ranged in weight from 900 to 2240 grams.

Mental Development Index score (MDI)--referred to as the MDI, this is a score obtained from the administration of the Bayley Scales of Infant Development, Mental Development Index. The MDI scores obtained for this study were taken when the infants were 12 months of age. All testing was conducted at the Children's Developmental Clinic, Shands Teaching Hospital, University of Florida, between January 1, 1979, and December 30, 1980.

Psychomotor Development Index score (PDI)--a score obtained from administration of the Bayley Scales of Infant Development, Psychomotor Development Index. The PDI scores obtained for this study were taken when the infants were 12 months of age. All testing was conducted at the Children's Developmental Clinic, Shands Teaching Hospital, University of Florida, between January 1, 1979, and December 30, 1980.

Control Variables--from previous neonatal research on infants born to very young mothers, four variables will be used as control variables in the initial analysis. The four variables are infant's

birthweight, number of days infant spent in the hospital after his/her birth, mother's age, and mother's level of education. If these four control variables are significantly correlated to the two dependent variables--MDI and PDI scores--they will be used as controls in order to reduce the error variance when investigating the independent variables--measures of support network resources--in relation to the two dependent variables, MDI and PDI scores for the infants taken at 12 months of age.

Limitations of the Study

This study includes the following limitations:

Selection of sample. The sample was selected through ex post facto medical data. All adolescent mother subjects were single, lower SES, and 19 years old or younger. The infant subjects were all first born. All infants were born between January 1, 1979, and December 30, 1980, and utilized the NICU at Shands Teaching Hospital. The mother-infant dyads were selected from a total sample of 139 dyads, based on completeness of medical data, which may have biased the data. However, the reasons for incompleteness of the data varied widely from one dyad to another.

A local population. The sample was local in nature. These mother-infant dyads were representative of a southern lower SES population. Therefore, generalizability of the findings to a wider or national population is not possible.

Data collection procedures. The data were collected by highly trained medical personnel. While strict routines were followed in this hospital setting, some variation in the collection of data must

be acknowledged, due to individual differences among hospital staff. Also, the data on the adolescent mothers were collected by means of a questionnaire. Human factors impacted this data collection process, creating additional limitations to the study. Mothers provided self-reported data, sometimes under conditions of fatigue and environmental interference. Self-reported data always have limitations. The interpretation of each question may vary by the subjects. In this particular population--lower SES and adolescent in age--the ability to read and comprehend the questions as intended by the researcher may have been limited.

Incomplete medical data. A final limitation to this study was the occurrence of some incomplete data. Again, what factors caused this are difficult to ascertain. Since many of these mothers completed the questionnaire after several hours of waiting, the factor of fatigue must be considered. No pressure was put on the subjects to complete the data although hospital staff in the Children's Developmental Clinic were always present and available for clarification of the questions. This is a common limitation to the use of medical data since many factors intervene in the data collection process.

Limits of correlation studies. This study was correlational. An attempt was made to investigate possible associations between the measures of social support of adolescent mothers and the mental and psychomotor development of their infants. Cause and effect relationships are not implied in this study. The researcher is attempting to ascertain possible associations between a specific kind of variable, measures of social support, and measures of infant development. Other variables which may contribute to the infant's mental

and psychomotor development are acknowledged by the researcher. Given the newness of the theoretical framework for this study, the researcher chose to conduct an exploratory study, utilizing appropriate correlational procedures.

CHAPTER II
REVIEW OF THE LITERATURE

The concept of social support systems or networking has developed primarily through the efforts of investigators in the field of sociology. The role of social support in the qualitative development of young children has been identified and studied only in the past decade. More specifically, the relationship between social support system and specific, measurable indices of cognitive, social, and physical development of young children has been proposed only in recent years.

This chapter reviews the literature on the following topics: adolescent pregnancy and outcomes for the neonate and the young mother; the theoretical basis for social support systems and networks; and specific research that relates to the relationship of social support systems to such dependent factors as mental health, child abuse, and child development.

Adolescent Pregnancy and Outcomes

The proportion of births to adolescent mothers in the United States has increased dramatically since the 1960's. The Bureau of the United States census in 1980 summarized the occurrence of births to 15 to 19 year olds since 1950. In 1950, 12.6 infants were born to every 1,000 15 to 19 year olds, out-of-wedlock. By 1960, this figure had increased to 15.3. An escalation of births born to adolescent

mothers occurred between 1960 and 1970. By 1970, 22.4 infants were born to every 1,000 15 to 19 year olds out-of-wedlock. The increase continued but did level off. By 1978, the latest year for which data were available, 25.4 births occurred out-of-wedlock to young women between the ages of 15 to 19 years of age. This information is summarized in the table below.

Table 1. Out-of-wedlock births per 1,000 women 15 to 19 years of age, 1950-1978.*

Year	15 to 19 years old	20 to 24 years old
1978	25.4	36.1
1975	24.2	31.6
1970	22.4	38.4
1960	15.3	39.7
1950	12.6	21.3

*Bureau of the Census, January 1982, p. 7

The ratio of the number of out-of-wedlock births per 1,000 live births has more than tripled since 1950 for women 15 to 19 years old and for women 20 to 24 years old. By 1978, the latest year data are available, 44 percent of all births to women 15 to 19 years old and 16 percent of all births to women 20 to 24 years old were classified as occurring out-of-wedlock. The proportions are much higher for blacks than for white women; in 1978, approximately 8 out of every 10 births to blacks 15 to 19 years old were born out-of-wedlock,

compared with 3 out of 10 for white women this age. These differences between the two races can be traced to different patterns of contraceptive effectiveness and marriage (Bureau of the U.S. Census, 1982, p. 8).

The absolute number of live births to teenagers reached a maximum in 1972 and 1973 but has since shown some decline (Scott, 1981). Lincoln, Jaffe, and Ambrose (1976), writing in the influential Guttmacher report, used the term "epidemic" to describe the occurrence of adolescent pregnancy; articles in newspapers picked up the term, thus reinforcing the general notion that the rate of adolescent pregnancy had escalated rapidly. Currently, over one million female adolescents give birth annually (Guttmacher, 1981).

Zelnick and Kantner (1979), in a national probability sample of young women, found that there have been changes in sexual activity as indexed by mean age of first coitus. Between 1971 and 1976 the median age of first intercourse shifted among white females from 18.9 years to 18.1 years, and for black females from 17.1 years to 16.6 years. Moore, Hofferth, Wertheimer, Waite, and Caldwell (1981) reported that during the past decade, the United States witnessed a dramatic decline in fertility rates. Despite this overall trend, fertility rates have not fallen as rapidly among teenagers as among older women. Thus the relatively slow decline in fertility rates among teenagers relative to older women, combined with large teenage cohorts, has resulted in another phenomenon--the proportion of all babies that are born to teenage mothers has risen significantly.

In 1950, females under the age of 20 bore 12 percent of all children and 20 percent of all first children. In 1978, they bore

17 percent of all children and 31 percent of all first children (Moore, Hofferth, Wertheimer, Waite, & Caldwell, 1981). An accurate assessment of occurrence of adolescent pregnancy might be summarized in the following way: the actual rate of adolescent pregnancy has not increased dramatically as some sources have indicated. Instead, the rate of adolescent pregnancy has been sustained in a relatively stable fashion. However, when the population as a whole has been studied, the birth rate has definitely declined. In light of the slowed rate of childbirth among adult women in the United States, the rate of adolescent pregnancy must be viewed with concern. In addition, outcomes for adolescent mothers and their infants are less positive than for adult mothers and their offspring, as described in the following section.

Outcomes of Adolescent Pregnancy

The adverse personal and social consequences of teenage pregnancy, particularly in the earlier (13 to 15) years, have been well documented. Included have been school dropout (Bacon, 1974; Furstenberg, 1976), marital problems and divorce (Furstenberg, 1976), less psychologically competent offspring (Furstenberg, 1976; Oppel and Royston, 1971; Field, 1981), and higher rates of abusiveness (DeLissovoy, 1973).

Early childbearing and lower educational attainment have been documented in the research (Furstenberg, 1976; Moore and Waite, 1977; Guttmacher, 1976, 1981). The importance of schooling to other life outcomes has been found repeatedly in the research. Income, occupation, fertility, sex role orientation, unemployment, and even the probability of divorce are affected by education (Moore et al., 1981).

Scott (1981) indicated that when a wide range of medical, social, and maternal criteria are applied to the prediction of intelligence levels in childhood, maternal education appears as a major predictor of outcome. Thus the consequences of early childbearing for the young mother have been multifaceted--educational, social, psychological, and health-related.

Neonatal Outcomes

Studies of the neonatal outcomes of infants born to teenage mothers suggest that these infants are a high-risk group (Field, 1981; Holstrum, 1979; Hofheimer, 1979). The teenage population is characterized by low socioeconomic status, poor nutrition (not only for financial reasons but also due to cultural idiosyncracies), increased illegitimacy, and lack of early prenatal care, as well as a higher rate of pregnancy and delivery complications (Monkus, 1981). Field (1981) reported that previous and current research suggest that the teenage mother and her offspring are at risk primarily due to social, educational, and economic factors. Quay (1981) and Oppel and Royston (1971) report that teenage mothers are more likely to give birth to less psychologically competent offspring.

In summary, infants born to teenage mothers are at a greater risk of being lower birth weight than infants born to mature women. The increased risk is largely due to the frequent association between teenage pregnancy and other factors, such as poor socioeconomic status, poor nutrition, or lack of prenatal care (Monkus, 1981).

White (1979), writing in The Origins of Human Competence, states

> After 20 years of research on the origins of human competence, we are convinced that much that shapes the final human product takes place during the first years of life. We are also convinced that the traditional failure of society to offer training and assistance to new parents has several harmful consequences . . . put simply, people could grow up to be more able and more secure if their first teachers did not have to be "self-taught and unsupported." (p. 183)

With this in mind, the concept of social support systems or networks is now presented.

The Theoretical Basis for Social Support Networks

The concept of "social support network" or system is defined by several investigators and theorists.

Sociologists have studied the family network or system extensively. Buckley (1967) described a system's most fundamental property as being the interdependence of parts or variables. Adams (1970), another family sociologist, indicated that proximity, not separation, is the rule for American families, with geographical isolation from kin being characteristic of only a small portion of the population. Adams (1970) also stated that it is the "professional and managerial families of the upper-middle class who are most likely to be separated from their kin" (p. 578). According to Sussman and Burchinal (1962) and Adams (1970), the working classes are more kin oriented. In terms of daily living, then, kin seem more salient to working class people.

Keniston (1977) described the Carnegie Council on Children in 1972 as having addressed a central issue--is child development itself heavily influenced by its social context? (p. 1). Keniston (1977)

went on to say that "until policy makers and planners shift their focus to the broad ecological pressures on children and their parents, our public policies will be unable to do much more then help individuals repair damage that the environment is constantly reinflicting" (p. 2). Sussman and Burchinal (1962) agreed with Keniston's assessment of family networks and challenged the concept of the healthy family being autonomous and independent.

Several current theorists in human development support the research of such sociologists as Adams, Buckley, Sussman, and Keniston. Among human development researchers at the forefront are Bronfenbrenner, Powell, Cochran, and Brassard. Bronfenbrenner (1974) presents an "ecological model" of human development which states

> At the heart of the system is the human organism, which through its biology and "personality" establishes many of the parameters of human behavior. Surrounding and containing the organism is the immediate setting which may be defined in terms of three dimensions: design of physical space and materials, the roles and relationships of other people to the organism, and human activities surrounding the organism. (Bronfenbrenner, 1974, p. 4)

Bronfenbrenner's ecological model provides a mechanism for analyzing the development of the child and the personal social networks of immediate family members (Cochran and Brassard, 1979). Families are embedded in networks of relatives, neighbors, and friends. Those network members influence the rearing of children, sometimes directly and often indirectly. Yet such social influences have gone virtually unrecognized by those studying child development (Powell, 1979).

Cochran and Brassard (1979) define a network as "those people outside the household who engage in activities and exchange of an

affective and/or material nature with the members of the immediate family. Membership is confined to persons outside the household and usually consists of other kin, neighbors, friends, schoolmates, and workmates" (Cochran and Brassard, 1979, p. 602).

Cochran and Brassard (1979) used the framework of network analysis to assess the social ecology of the parent and child in relation to its possible effects upon child development. They state that families have always been embedded in networks of relatives, neighbors, and friends. Those network members have undoubtedly influenced the rearing of children, sometimes directly and often indirectly.

Cochran and Brassard (1979) made a strong theoretical case for the impact of the support system on early child development. They stated that there are four ways in which the parent's social network has influenced the child:

1) Co-workers can compete with the child for the parent's time.

2) The social network can link the parent to new life possibilities.

3) The social network can influence the child's development through the parental role itself.

4) Provision of the opportunity for active participation in the networks of his or her parents can lay the foundation for the development of the child's own personal social network or "network building skills" (Cochran and Brassard, 1979, p. 4).

In reference to three and four above, the following theoretical framework was elaborated by Cochran and Brassard. The social network can influence the child's development through the parental role itself.

More specifically, the parent's role is influenced by the 1) exchange of emotional material assistance between parents and network members (Stack, 1974; Cochran and Brassard, 1979; Furstenberg, 1976); 2) provision of childbearing controls, that is, friends, relatives, or neighbors of parents encourage or discourage participation in patterns of parent-child interactions; and 3) availability of role models. Parents adopt or modify some childrearing practices as a consequence of watching the behavior of network members. Bandura (1977) pointed out that participation is not a necessary condition for the impact of the modeling to be manifested. Bandura also found that to have an impact, the modeling person must be able to demonstrate the ability to nurture or to control valuable resources.

Provision of the opportunity for active participation in the networks of his or her parents can lay the foundation for the development of the child's own personal social network or network building skills. Furthermore, Cochran and Brassard (1979) propose that there is general acceptance of the fact that the normal child progresses developmentally from a more to a less egocentric view of physical and social events and structures and that this progress also involves a cognitive shift from a concrete, stimulus-bound perception of the world to a representation of reality which is more abstract and symbolic. These developmental changes have significance for the child in relation to both the personal social networks of the parents and the development of the young child's own network-building skills. According to Cochran and Brassard (1979), reciprocal exchange is the major cognitive skill which is attained through the maintenance of network relationships.

The developmental benefits of reciprocal exchange are cited by Cochran and Brassard as contributing to successful participation in the peer group, preadolescence, and adulthood. It is through exchanges between parents and members of their social networks that the child has the first opportunity to observe these reciprocal processes at work. In contrast to Piaget's (1962) concept of reciprocity developing due to peer exchange, Cochran and Brassard suggested that adult members of the parent's social network provide another significant vehicle for the development of reciprocal skills.

Finally, Cochran and Brassard (1979) emphasized in their theoretical model of networking that the relationships between the child and the network members are bidirectional in influence. The child stimulates and reinforces the adult members of the support network to behave in certain ways.

Very few investigators, according to Cochran and Brassard, have examined systematically the impact of the parents' social networks upon child development. They proposed that research be conducted in four areas related to cognitive child development.

1) In the Piagetian sense the members of the social network may provide the moderately conflicting and contrasting experience which upsets the cognitive equilibrium enough to permit movement to a higher stage of cognitive development.

2) Task completion--the parents' social network may facilitate the development of skills required by children in goal-oriented tasks.

3) Representation thinking--members of a social network are sometimes present and often absent. In their absence, reference

to these individuals may facilitate the development of cognitive memory capacities.

4) Cognitive receptivity--social networks may affect the development of cognitive receptivity or openness to new intellectual stimuli. Hess, Shipman, Brophy and Bear (1968) found that mothers who were involved in many rather than few out-of-home activities made greater use of home resources in interacting with their preschool children.

Cochran and Brassard (1979) stressed the direct influence of the support system on the child. They cited cognitive and social stimulation as being the result of interaction with new people, varied activities, and varied settings. Piaget (1962) described the modeling of temper tantrums by a friend's child, which stimulated similar behavior in his daughter. Finally, Cochran and Brassard stressed the provision of opportunities for active participation in the networks of his/her parents. This, according to Cochran and Brassard, contributed to the child's own personal social network and encouraged the "network-building skills."

How personal, social, support networks influence the child's development can be summarized as follows: network influences are both direct and indirect. They include the sanctioning of parental behaviors and the provision of material and emotional support for both parent and child. Network members also serve as models for parent and child. These processes (stimulation, modeling, involvement) interact with the developmental age of the child to "stimulate the basic trust, empathy, and mastery of the reciprocal exchange skills essential to network functioning" (Cochran and Brassard, 1979, p. 605).

McKinlay (1973) states that although of considerable potential, the concept of a social network is one of the most underdeveloped and underemployed concepts in present-day sociology (p. 275). Sussman and Burchinal (1962) state that before 1940 most Americans rejected the notion that receiving aid from their kin is a good thing. Then, a new empiricism emerged in the late 1940's that questioned the persistence of the isolated nuclear family notion and presented evidence to support the viability of kin family network in industrial society. Today, empirical evidence from studies by investigators in a variety of disciplines substantiates the notion that the extended kin family carries on multitudinous activities that have implications for the functioning of other social systems of the society. "The major activities linking the network are mutual aid and social activities among kin related families" (Sussman and Burchinal, 1962, p. 235).

Simm and Belz (1980) describe the network in terms of learning theory. "It is clear that for many types of learning problems and situations, the learner's impulse is to seek out another individual within his or her own social network so that assistance can be acquired about the learning project in question" (p. 22). Essentially, Simm and Belz conceptualize the social support network into many possible learning situations or environments, whereby the learners adapt their own resources within the framework available to them. This process has been described as substantially one of information processing or the exchange of information. Furthermore, Simm and Belz have stated that networking enhances learning rather than inhibits it, as has been the case in more traditional learning modes. Mitchell (1969)

also described networks as "communication links" which act as vehicles for the flow of information.

Luikart (1977) utilized a learning approach to his definition of networking. Luikart described self-directed learners as those who are most likely to seek out and receive help from other individuals with whom they have a common bond.

Finally, Caplan (1974) defined a support system or network to be an "enduring pattern of continuous or intermittent ties that play a significant part in maintaining the psychological and physical integrity of the individual over time" (p. 9).

Thus, in recent years, the significance of support systems, often called networking, has been emphasized by many people in many professions, but especially the helping professions. Waters (1981) suggested that while supports are important to people throughout their lives, they are crucial at times of transition.

Caplan (1974) noted that the concept of support systems has focused on the health-promoting forces at the person-to-person and social levels which enable people to master the challenges and strains in their lives. Therefore, Caplan urges investigators to utilize the network concept from the standpoint of being a "wellness" rather than a sickness model, an approach that examines methods people use to acknowledge and mobilize their strengths. In Caplan's view, the major feature of support networks is that the person with a problem is "dealt with as a unique individual. . . . Significant others help the individual to mobilize his psychological resources and master his emotional burdens; they share his tasks and they provide him with extra supplies of money, materials, tools, skills, and cognitive

guidance to improve his handling of his situation" (p. 5-6). Caplan conceptualizes the support network in a positive fashion. To Caplan, the notion of support represents an enrichment of existing strengths, rather than a propping up of someone who is weak.

Gourash (1978) reviewed the literature on help-seeking behavior and concludes that help-seeking is a critical aspect in the nuclear family's ability to cope and survive in time of crisis. Help-seeking is defined by Gourash as "any communication about a problem or troublesome event that is directed toward obtaining support, advice, or assistance in times of distress" (p. 414). This conceptualization of support systems is defined, then, in a help-seeking fashion. Gourash describes help-seeking as encompassing requests for assistance from friends, relatives, and neighbors as well as professional helping agents.

Zimbardo and Formica (1963) described people who solicit help as usually looking for comfort, reassurance, and advice. Booth and Babchuck (1972), Litman (1974), and Quarantelli (1960) all found that individuals tend to turn initially to family and friends and, as a last resort, to professional services and agencies. Rosenblatt and Mayer (1972) found that the sole use of professional services occurs much less freuqntly than either exclusive reliance on family and friends or help-seeking from both the social network and professional sources.

Gourash (1978) posited that members of the support network can affect help-seeking in a number of ways: 1) by buffering the experience of stress which obviates the need for help; 2) by precluding the necessity for professional assistance through the provision of

instrumental and affective support; 3) by acting as screening and referral agents to professional services; and 4) by transmitting attitudes values, and norms about help-seeking (p. 416).

Speck and Rueveni (1969) utilized the social network concept in developing a therapy network for dysfunctional family units. Speck and Rueveni (1969) defined social network as "a group of persons who maintain an ongoing significance in each other's lives by fulfilling specific human needs" (p. 184). Like Sussman, Speck and Rueveni have rediscovered that even in our own culture of nuclear families, the extended family kinship system still plays a significant role in the adaptation of nuclear families. Utilizing this approach, Speck and Rueveni (1969) successfully treated schizophrenic individuals by assembling family therapy networks, some numbering as many as 40 people.

In summary, the notion of support systems or networking is defined and described by several investigators and theorists, from sociology to the helping professions. Support systems contribute not only to positive mental health, but there is some evidence that the absence of support networks is associated with negative outcomes, as described in the subsequent section on research related to support systems. It is suggested that help-seeking is especially crucial in times of transition or crisis (Waters, 1981). Adolescent pregnancy thrusts the young female into accelerated role transition, thus placing her in a crisis situation (Bacon, 1974). Thus, the need for social support for the adolescent mother appears to be critical at this time in her life.

Research Related to Social Support Networks

In the previous section, the relatively recent emphasis on the role of support systems or networks is established. Research utilizing support systems as a predictor variable has been conducted. The implications from this research are that social support systems are important to persons through all stages of the lifespan. Cobb (1976) summarized the research on social support and concludes that it plays a critical role in moderating crisis situations. While most of the research identifies social support as a positive force in human lives, McKinlay's (1973) study found that social support systems may discourage the use of medical facilities. Tolsdorf (1976) concluded from his study of nonpsychiatric and psychiatric subjects that mental health may be correlated with the quality and quantity of one's social support system and the ability to draw upon its many resources. Berkman and Syme (1979) reported that social circumstances such as social isolation may have pervasive health consequences to the individual, such as vulnerability to disease in general and even death. Swick, Brown and Watson's (1980) study finds that neighborhoods that have a higher degree of social interaction, less transience, and more child-child interaction are perceived by residents to be more supportive.

McKinlay (1973) conducted a study of social networks, lay consultation, and help-seeking behavior. McKinlay addressed the general question, "What is the apparent role of the family, and its kin and friendship networks, in the utilization of services?" Utilizing two approaches--sociodemographic data (such as geographic proximity

of friends and relatives and frequency of contact with them) and open-ended responses to hypothetical questions/situations--McKinlay studied 87 unskilled working-class families, consisting of two subsamples of "utilizing" and "underutilizing" respondents.

The subjects were drawn from a centralized hospital-based maternity clinic in Aberdeen City, Scotland, and interviewed four times over a period of about one and a half years. Women who attended the central hospital clinic at least once after the birth of their infants were included in the study. A woman was regarded as a "utilizer" if she a) attended the clinic for the first antenatal visit before the end of the 17th week of gestation and b) having had the pregnancy confirmed by the obstetric staff, attended regularly for antenatal care.

A woman was regarded as an "underutilizer" if she a) had no antenatal preparation at all, b) attended for some form of care only after the 28th week of gestation, or c) was an emergency admission during labor without any previous prenatal care, or d) defaulted from her clinic appointments more than three times consecutively without offering an excuse.

The subjects were a random sample consisting of 48 underutilizers (40 multiparae and 8 primigravida) and 39 utilizers (24 multiparae and 15 primigravida). The variables studied were components of kinship and friendship network.

The findings indicate that more underutilizers had relatives living in the same house and, when their presence was controlled for, still had more relatives living close geographically, despite comparable numbers of relatives seen by members of both study groups.

The utilizers--whether multiparous or primiparous--visited with relatives less frequently than did underutilizers. Utilizers made greater use of friends and husbands and less use of mothers or other relatives and tended to consult a narrower range of lay consultants. The findings suggest that support by family members may serve as an aid in medical situations. Further study is needed to determine the effect of this intervention by the family on the degree of medical care sought by the patient.

Cobb (1976), in a review of social support as a moderator of life stress, identifies three classes of social support: 1) information leading the subject to believe that he/she is cared for and loved; 2) information leading the subject to believe that he/she is esteemed and valued; and 3) information leading the subject to believe that he/she belongs to a network of communication and mutual obligation.

Cobb summarized the research on social support as a moderator of life stress. He suggests that there is strong and often quite hard evidence, repeated over a variety of transitions in the life cycle from birth to death, that social support has been protective. Convincing evidence exists that adequate social support can protect people in crisis from a wide variety of pathological states: from low birth weight to death, and from arthritis through tuberculosis to depression, alcoholism, and other psychiatric illnesses. Cobb encourages investigators to study the effect of a support system as a moderator of life situations so that a more thorough understanding of the role and function of support systems might be obtained.

Tolsdorf (1976) conducted an exploratory study of social networks, support, and coping. Using the social network model, borrowed from sociology and anthropology, Tolsdorf described and quantified an individual's immediate family and those with whom he/she has regular contact.

The purpose of the Tolsdorf (1976) study was to determine the usefulness of the social network model in the study of stress, support, and coping. The main interest was to expand the network model to coping and psychopathology using a system rather than an individualistic approach. Extensive interviews were conducted at the Northampton, Massachusetts, and Newington, Connecticut, Veterans Administration Hospitals with ten recently hospitalized, first-admission males, hospitalized as medical (nonpsychiatric) and ten psychiatric subjects. In the psychiatric sample, seven were diagnosed as paranoid schizophrenic, two as acute schizophrenic episode, and one simply as schizophrenic. All subjects were male veterans matched for age, marital status, education, and socioeconomic status.

Data were collected on the size and membership of the subjects' social networks, the qualities of the relationships the subjects had with their network members, the subjects' attitudes, beliefs, and expectations toward their networks as to the role network members could play in helping them cope with life stresses, the presence and type of recent life stresses, and the extent and nature of their usual coping styles.

The methodology yielded two types of data: quantitative data that summarized the network variables and qualitative data gathered during the interview process. Three classes of variables were found

to discriminate between the two groups: 1) relationship density and multiplex relationships; 2) functional indegree and outdegree; 3) kinship members and linkages. Medical subjects tended to 1) give and receive equal numbers of functions but psychiatric subjects tended to receive many more functions than they provided to others; 2) the psychiatric subjects reported fewer intimate relationships with their network members in a network that was more heavily dominated by family members, where functional people were in a more controlling and dominant position and where overall there were relatively few but relatively more powerful functional people in the network.

The medical subjects, on the other hand, reported more intimate relationships with more people in a network that was less dominated by family members and where functional people were on equal standing with subjects in the exchange of support, advice, and feedback.

The qualitative data indicated that the psychiatric subjects demonstrated negative network orientation--a set of expectations or beliefs that it is inadvisable, impossible, useless, or potentially dangerous to draw on network resources (p. 413). They had a history of having not drawn on the advice, support, or feedback of their network members, and they explicitly stated that they intended not to draw on such supports in the future. When compared to the psychiatric group, the medical group, by and large, held positive network orientations; the majority stated that they did seek out support and resources of their network members, especially if they could not handle a problem themselves.

The above data suggest that the medical subjects had more contact with, and drew more heavily on, a broader and stronger base of network

resources, compared to the psychiatric subjects. Consequently, the medical subjects received much more network support compared with the psychiatric group. "Network mobilization" was cited frequently by the medical subjects as a way of coping with life stresses, while psychiatric subjects avoided it. In summary, medical subjects utilized their social support networks more frequently than did the psychiatric subjects. In this study, network utilization was associated with healthier coping skills.

Berkman and Syme (1979) presented findings on a study of social networks, host resistance, and mortality. The relationship between social and community ties and mortality was assessed using the 1965 Human Population Laboratory survey of a random sample of 6928 adults in Alameda County, California, and a subsequent nine-year follow-up study of mortality. The findings showed that people who lacked social and community ties were more likely to die in the follow-up period than those with more extensive contacts. The age-adjusted relative risks for those most isolated when compared to those with the most social contacts were 2.3 for men and 2.8 for women. The association between social ties and mortality was found to be independent of self-reported physical healthy status at the time of the 1965 survey, year of death, socioeconomic status, and health practices such as smoking, alcoholic beverage consumption, obesity, physical activity, and utilization of preventive health services as well as a cumulative index.

A Chi square statistic was used in this study, modified to include more than two comparison groups. Four sources of social context were examined: 1) marriage, 2) contacts with close friends

and relatives, 3) church membership, and 4) informal and formal group associations. With few exceptions, respondents with each type of social tie had lower mortality rates than did respondents lacking such connections. In every sex and age category, people who reported having few friends and relatives and/or who saw them infrequently had higher mortality rates than those people who had many friends and relatives and saw them often. A Social Network Index was constructed to summarize the effects on mortality of increasing social isolation. The findings from this study suggest that social circumstances such as social isolation may have pervasive health consequences, and they support the hypothesis that social factors may influence host resistance and affect vulnerability to disease in general.

Swick, Brown, and Watson (1980) hypothesized that at least four factors within the neighborhood determined whether it was a supportive social network or nonsupportive network. Three issues were addressed.

1) The family's perception of itself and the outer world as positive or negative will affect the willingness to form networks within the neighborhood.

2) The family's perception of its needs and the needs of neighborhood members and the probability of meeting their needs within the neighborhood will affect the willingness to form networks within the neighborhood.

3) The degree of stress the family and neighbors are under as well as their ability to deal effectively with stress will affect the development of supportive networks. Swick and colleagues developed the PNSS (Percention of Neighborhood Supportiveness Scale) which contained questions that related to perceived neighborhood

support and the demographic makeup of the neighborhood. Subjects were early childhood graduate students at the University of South Carolina during the fall semester of 1979. There were 164 subjects, predominantly Caucasian, married, professional educators, with middle socioeconomic status. The subjects were administered the PNSS; Part A consisted of 27 questions that provided demographic information about the respondent and the respondent's neighborhood. Part B was a Likert Scale of behaviors which might be found in supportive neighborhoods. A Crombach Alpha internal consistency reliability coefficient of .93 was computed in a pretest.

The ANOVA revealed significant relationships for scores obtained in Part A (Demography) and Part B (Perception of Supportiveness) for Amount of Playtime, Age of Respondent, Type of Dwelling, Longevity in Neighborhood, Income, Frequency of Social Activity, and Frequency of Social Activity Involving Children. Neighborhoods were perceived as more supportive when 1) more children played with other children; 2) slightly older adults resided in the neighborhood; 3) home owners were more numerous; 4) higher incomes existed; and 5) longevity in the neighborhood was present. In summary, this study evaluated a neighborhood as to its degree of supportiveness and how the subject's perception of the neighborhood related to the subject's attitude about his neighborhood. Findings show that neighborhoods that had a higher degree of social interaction, less transience, and more involvement with children were perceived as being more supportive neighborhoods.

Conceptual Framework for Research on Networking and Child Development

The current resurgence of interest in familial influences on child behavior and development is accompanied by a strong concern for the social and economic conditions under which families carry out their childrearing functions (Powell, 1979). The interplay between the social environment and the family childrearing process is relatively uncharted terrain, and theoretical guidelines for such research are relatively few in number. Powell (1979) makes a strong argument that the child's socialization experience is related to the nature of the family's interaction with its immediate social environment. The networking approach views the family as an open, adaptive system whose exchanges with the environment provided emotional and material support for the family's childrearing functions, socialize the family into certain childrearing beliefs, practices, and family-child relationships (Powell, 1979). Bronfenbrenner (1974) suggests that the progressive fragmentation and isolation of the family in its childrearing role requires support systems that undergird parents in rearing their children.

While research is limited, there is evidence of a strong relationship between family life ecology and child behavior from research on the correlates of child abuse (Garbarino, 1976; Parke, 1977) and on the development of children in single-parent families (Hetherington Cox, & Cox, 1977).

Parke (1977) posited a social-psychological theory of child abuse, based on research data, in which cultural sanctioning of violence and lack of community support systems for families are viewed as supporting

the development of abusive parents. Garbarino (1976) found that the degree to which mothers have been subjected to social-emotional stress without adequate support systems accounted for a substantial proportion (36 percent) of the variance in rates of child abuse and maltreatment. Hetherington, Cox, and Cox (1976) found that the lack of support systems played a significant role in disruptions in the development of children of mother-headed households.

As Keniston (1977) pointed out, since the early 1800's the concept of families as autonomous units has been an integral part of the moral, economic, and political fabric of the United States. Thus, the new paradigm of a socioecological perspective has emerged slowly and with some reluctance.

How personal, social, support systems influence the child's development can be summarized as follows: network influences are both direct and indirect. They include the sanctioning of parental behaviors and the provision of material and emotional support for both parent and child. Network members also serve as models for parent and child. These processes (stimulation, modeling, involvement) interact with the developmental age of the child to "stimulate the basic trust, empathy, and mastery of the reciprocal exchange skills essential to network functioning" (Cochran and Brassard, 1979).

Research Related to Child Development and Networking

The paradigm of the socioecological relationship to child development has emerged only in the last decade. Research that connects networking with child development and behavior has been limited. Several of these studies are now presented.

Stevens (1981) and Hough and Stevens (1981) stated that we have been preoccupied with constructing and designing formal support systems like parent education programs, Home State programs, and parent-child center programs that have enabled parents to rear competent children. However laudable that goal, Stevens cautions that most parent intervention programs have been developed from ignorance. Most researchers, according to Stevens, have not attempted to uncover existing informal networks that enable black parents, especially, to rear children competently. Stack (1974) found that the black parent's social network played a significant role in the rearing of children. Childrearing was perceived not as an isolated task of the mothers, but rather a task to be shared by network members.

Stevens studied 300 low-income black families in a large southern metropolitan area to see if a number of aspects of the mother's behavior and characteristics of her network were correlated with her infant's development. Stevens utilized a multiple correlation approach and found that mothers who were more emotionally and verbally responsive and who had networks composed of more females had toddlers who were developing better, as measured by the Bayley Scales of Infant Development. Stevens concluded from his study that "natural networks" of black families were best left intact and undisturbed. Stevens also concluded that intervention programs have not adequately taken into account the role of support networks in the development of young children.

Garbarino (1976) studied ecological correlates of child abuse. Garbarino utilized Bronfenbrenner's ecological construct to look at the possible correlates between child abuse and parent support systems.

The mediation of immediate family settings by socioeconomic forces was hypothesized to be related to the degree to which children experienced abuse and maltreatment. Counties of New York were chosen as units of analysis. It was assumed that the 1973 reports recorded by the state-wide Central Registry were a reasonably valid index of child abuse and maltreatment. Data reported for the period September 1, 1973, to January 31, 1974, were used. The United States census was chosen as the source for indices of the independent variables support systems for parenting. The variable indices were 1) transience, 2) economic development, 3) utilization of educational resources, 4) rurality-urbanism, and 5) SES of the mother.

The analysis was designed to test the hypothesis that the socio-economic support system in the family in each county was directly associated with the rate of child abuse and maltreatment. Stepwise multiple regression was utilized to generate the best predictor equation based on the independent variables.

The results indicated that the ecological context generated by economic and educational resources was an important factor in the etiology of child abuse and maltreatment. Overall economic distress appeared to be important through its impact on mothers as well as directly on the community and neighborhood. Garbarino concluded that abuse and maltreatment was, to a large extent, related to economically depressed mothers, often alone in the role of parent, attempting to cope in isolation without adequate facilities and resources for their children. The results of this study suggest that one promising way to deal with the social problem of child abuse and maltreatment is by dealing with the support systems of mothers.

Several studies have correlated infant development with socio-environmental factors. In a study of the three-year developmental status of high risk infants, Holstrum (1979) investigated the development of premature and term infants. A multiphasic battery of tests was used to assess the developmental status of each child and the socioemotional environment in which she/he lived. Data were gathered to answer the following research questions: 1) Do those infants who were sick and/or premature at birth catch up in their developmental status to term infants by three years of age? 2) Which of the variables under investigation contribute the most to the prediction of developmental status.

The study involved 102 three-year-olds born at or transferred to Shands Hospital, University of Florida. Half of the children had been placed in the NICU (Neonatal Intensive Care Unit) due to prematurity or illness. The others were term infants placed in the Newborn Nursery. The children were evaluated with the Stanford Binet, the Carrow Test for Language Comprehension, and the Beery Developmental Test of Visual-Motor Integration. Demographic and Socioenvironmental data were obtained through the Personal Interview, the Stressful Life Events Checklist, and the Behavioral Interview. Birthweights and amount of neonatal complications were obtained from medical records.

The results showed no statistically significant differences between the NICU and the term infants. The data suggest, however, that the small infants are still small at three years of age, and the infants who had the greatest amount of complications were found to be the most significant predictors of three-year developmental

status. Socioeconomic status contributed significantly to the prediction of IQ and visual-motor integration. It was found that mothers with more stress experiences in their lives were more likely to perceive their children as having behavioral problems.

Bender (1980), in a study of adolescent, early childbearing, and preventive health services, hypothesized that the high rate of adolescent pregnancy and poor use of preventive health services by adolescents before, during, and after pregnancy are conditioned by factors in the adolescent's private culture. This cultural analysis included a study of the events of pregnancy and the attitudes, beliefs, and values which surround the pregnancy for 35 adolescent mothers. The adolescents were residents of a town in the southeastern United States called Farmville. Viewpoints of members of the community and of health providers were used also.

Instrumentation included a schedule, a questionnaire, open-ended interviews, and direct observation. Data were collected from 35 of 76 adolescents who had given birth in Farmville in 1976. Materials from ten of these interviews, when combined with data from reinterviews, were developed into case studies. Data from the remaining 35 interviews were incorporated into the analysis which is organized in six themes: contraceptive knowledge, use, and responsibility; initial reactions to pregnancy; family relationships, supportive networks, acceptability of health care, and adolescent motherhood.

The author concluded that adolescents and adults alike perceive early, unplanned pregnancy as a mistake. The high rate of adolescent pregnancy in Farmville was attributed to differences between the

private culture of adolescents and the community's public culture. Specifically, adolescents lacked information related to contraceptives, and they were often unable or unwilling to admit that their sexual activity violated certain cultural norms. Recommendations for creating culturally appropriate services for adolescents were made in keeping with the conclusions named above.

Hofheimer (1979) studied the developmental outcomes for infants born to adolescent mothers. The primary purpose of the study was to assess the contributions of the mother's age, perinatal risk, and socioenvironmental and medical resources to the prediction of dimensions of the mother-infant transaction process and the developmental status of the infant.

Data were collected in a clinical setting on an age-specific sample of 77 mothers and their six-month old infants. Infant development was assessed using the Bayley Scales of Infant Development. Mother-infant transaction was analyzed using the Adapted Beckwith Behavior Scale (ABBS). Demographic and socioenvironmental data were obtained from the Child and Family Development Interview.

Based upon the results of the multivariate multiple regression analysis, the variables which were identified as predictors of mental developments were 1) the age of the mother, 2) the type of prenatal care of the mother, and 3) the presence of prenatal complications. Psychomotor development was found to vary as a function of 1) responsive vocalization of the mother-infant transaction process and 2) the type of prenatal care received by the mother.

The results suggested that the infants of young mothers are at risk for problematic mental development. The data supported the

idea that the mother-infant relationship is important to the infant's development of competence. The findings suggested that more comprehensive interdisciplinary models of perinatal and pediatric support are associated with enhanced development of the infant. Also indicated was a need for the design of parent and infant-centered interventions for the young mother in order to enrich the quality of care and stimulation provided by the mother and thus enhance the development of the infant.

Colletta, Hadler and Gregg (1981) studied how adolescents cope with the problems of early motherhood. The purpose of this study was to measure the coping responses used by adolescent mothers (N = 64), to determine variables related to their choice of responses, and to examine the relationship between coping responses and emotional stress.

A nonprobability sample of adolescent mothers was obtained through the cooperation of a public school system in a large metropolitan area. Mothers were accepted for participation in the study if they were between 14 and 19 years of age, had one child two years of age or under, and were not currently married. The sample consisted of 64 black adolescents who averaged 16.27 years of age when their children were born and 17.47 years of age at the time of the interview.

An interview schedule was designed to elicit the mother's perceptions of the major problems in their lives, the ways they responded to the problem situations, and the emotional stress they experienced in each area. Support was measured by asking the mothers which individuals and/or institutions assisted them in each problem

area. Support was first coded 1 (nonsupport) to 4 (extensive support). Intercoder reliability ranged from .84 to .91 with a mean of .87.

The results showed that the adolescent mothers' major coping response was to ask others for assistance. This response was most common when the young mothers were faced with task-oriented problems. Interpersonal problems tended to elicit avoidance as a coping response, while conflicts with institutions elicited a range of responses. Direct action coping responses were related to higher self-esteem, more active support systems, and lower levels of emotional stress. The results are interpreted to indicate the importance of support systems which help young mothers deal with their daily problems.

These young mothers also cited isolation from peers and finances as being their major concerns. Fifty-four percent of the mothers were satisfied or very satisfied with the amount and quality of help available from community services. Twenty-nine percent reported problems with community services, and 15 percent were acutely unhappy with the quality or availability of services. The style of coping was related to other variables. Young mothers with high self-esteem and active support systems were significantly more likely to choose an active coping strategy while there was a trend for those with an internal locus of control to use active coping responses. Finally, adolescent mothers with active coping styles reported lower levels of emotional stress across problem categories.

A second major finding was that when faced with interpersonal problems, with their parents, peers, or childcare, the mothers chose to cope by avoiding the situation.

Held (1981) studied the self-esteem and social network of 62 women, 17 years of age and younger, who were in their third trimester of pregnancy. Self-esteem was assessed by administration of the Coopersmith Self-Esteem Inventory. Social network information was sought by asking the adolescent to rate her perception of reactions to the pregnancy by significant others. She was then asked to rank these people in order of importance to her. The study population included women from Houston's three major ethnic groups--white, black, and Mexican-American--who were in five different program settings. All women received medical care from the obstetrical staff of the University of Texas Medical School.

Tests of significance were done using the Chi Square method of correlation. In order to study self-esteem, the data were artificially dichotomized into scores above and below 70; 70 and above are normal scores reported for most population groups. It was statistically significant at the .05 level of confidence that almost 60 percent of black women keeping their babies scored 70 or above on the Coopersmith Self-Esteem Test. Fewer than 30 percent of the whites and Mexican-Americans scored 70 or above. Self-esteem was higher for those women attending a day school for pregnant teenagers. Scores were higher than for women at clinic sites and at the Home for Unwed Mothers. Social Network data indicated that the mother of the adolescent was most disapproving. The father of the baby was most approving. Ninety-two percent of the adolescents placed their mothers as being more important to them than they themselves were. In summary, self-esteem scores were highest among black women keeping their babies who attended the day school for pregnant women. Held

suggests that future research should include longitudinal research especially with regard to enactment of future plans.

Summary

Social support systems or networks have been defined and studied primarily in the fields of sociology and anthropology. More recent research has viewed the social support system in relation to family development and functioning. Only in recent years has the possible relationship between the social support system and specific measures of child development been proposed. Indeed, very few studies have focused on the mother's social support system and the qualitative development of her young child.

The widespread occurrence of adolescent pregnancy in this society has caused concern for the young mother, the development of her infant, and for the consequences for society in general. There is a need to study this population of adolescent mothers in regards to the amount of social support that they have available to them and the consequent development of their infants. Since adolescent mothers have experienced higher rates of prenatal and obstetric complications and since infants born to adolescent mothers frequently have been high-risk, low-birth-weight, due to neonatal complications, there is a specific need to investigate possible correlations between the support system of the adolescent mother and particular developmental measures of the infant.

There are limitations to the cited research by Held (1981), Colletta, Hadler, and Gregg (1981), and Bender (1980). These studies utilized questionnaires to obtain their data. The limitations of the

use of questionnaires included 1) the data were self-reported data; 2) incomplete data collection was more common; 3) interpretation of questions by the subjects may have varied; and 4) they were correctional rather than experimental. Additional limitations of these studies included the fact that the populations were local and not national in makeup. Thus, the generalizability of these findings was limited to such local populations and not to samples of a national scope. However, the findings of the above studies reinforced one another.

The implications of such research have significance for parent education, infant development, and mother-infant interaction. Intervention for adolescent mothers has been traditionally on a formalized basis. The possibility exists that social support systems may be a vehicle to further means of informal intervention that might encourage a young mother in her demanding role as a parent. Support systems may be related to quality child development.

CHAPTER III
METHODOLOGY

Design of the Study

This study investigated the relationship between measures of support network resources of single adolescent mothers and the cognitive and psychomotor development of their infants.

The purpose of this study was to investigate 1) the types of support network resources utilized by single adolescent mothers and the frequency with which these support resources are used; 2) the correlation of four indicators of support network resources to cognitive and psychomotor measures of development of the high-risk infants at 12 months of age (both linear and stepwise regression procedures were utilized to study the nature of the relationship between the two dependent variables and the four independent variables, each of which consisted of several measures of support); and 3) measures of self-concept and life stress of the adolescent mothers.

The research design used in this study was descriptive and ex post facto. Due to the nature of the variables--measures of existing support network resources and measures of cognitive and psychomotor development taken at one year of age--an ex post facto design was required. Therefore, the interpretation of the results from this study design was associational or relational and not causal. The strength of the design is that it allows the investigator to study

existing variables. Also, the support network was an attribute variable and was not manipulative.

Variables in this Study

Measures of four independent variables were studied. Three of these independent variables consist of more than one measure. The four independent measures include

1) Measures of communication efforts made by the support network during the infant's hospitalization in the Neonatal Intensive Care Unit at Shands Hospital, University of Florida. A composite or overall measure of this independent variable was obtained by totaling the actual number of visits made by members of the support network during the infant's hospitalization. (The length of stay in the hospital, in number of days, will be used as a control variable in the initial analysis.)

2) Measures of the adolescent mother's accessibility to her support network were obtained from the sociodemographic data. Three separate measures were grouped together to obtain this single measure. These three measures of accessibility include 1) accessibility to a car, 2) accessibility to a telephone, and 3) the mother's own perception of her accessibility to her support network (ease or difficulty). See Appendix for examples of this measure.

3) Measures of the adolescent mother's actual support network were quantified. Five questions from the sociodemographic data were used as measures of support; these measures were grouped to obtain one multiple correlation coefficient which was used as an overall measure of the relationships between adolescent mother's actual support and

the two dependent variables. These five measures include the number of adult relatives/friends living in the immediate area, the number of relatives/friends that can be counted on in times of real need, the frequency of get togethers with relatives/friends, in general and per week, and the total number of organizations the adolescent mother participates in. See Appendix for examples of this measure.

4) Measures of the adolescent mother's perception of her support network were grouped to obtain an overall measure of perception of support. These measures include the mother's perceptions of enough support, a perception of being overwhelmed, a perception of time to be by herself, a perception of the adequacy of that time to be by herself, and a perception of the overall level of happiness with her present living situation. See Appendix for examples of these measures.

Dependent Variables

The two dependent variables are scores attained by the administration of the Bayley Scales of Infant Development, Mental and Psychomotor Development Index. These scores were obtained when the infant was 12 months old, adjusted for prematurity.

Control Variables

Four variables used as control variables in the initial analysis were measures of 1) the mother's age, in years; 2) the mother's level of education, in years; 3) length of the infant's hospitalization, in days; and 4) the infant's birthweight, in grams.

Table 2. Independent, dependent and control variables in this study.

Independent Variables

1. Measures of communication efforts by the support network during the infant's hospitalization.
2. Measures of the mother's accessibility to her support network.
3. Measures of actual support network resources of the adolescent mother.
4. Measures of the mother's perception of her support network.

Secondary Variables

1. Measures of the mother's self-concept.
2. Measure of the mother's life stress.

Dependent Variables

1. The score attained by the infant when assessed with the Bayley Scales of Infant Development, Mental Index (MDI).
2. The score attained by the infant when assessed with the Bayley Scales of Infant Development, Psychomotor Index (PDI).

Control Variables (Used only in primary analysis)

1. Mother's age at birth of infant, in years.
2. Mother's level of education completed, in years.
3. Infant's birthweight, in grams.
4. Number of days infant was hospitalized.

Hypotheses to be Tested

Hypothesis I: There will be no significant linear relationship between measures of in-hospital communication efforts by the support network and Bayley scores of cognitive and psychomotor development of the infants at 12 months of age.

Hypothesis II: There will be no significant linear relationship between measures of the mother's accessibility to her support network resources and her infant's scores of development on the Bayley Mental and Psychomotor Index.

Hypothesis III: There will be no significant linear relationship between measures of the adolescent mother's actual support network resources and her infant's scores on the Bayley Mental and Psychomotor Index.

Hypothesis IV: There will be no significant linear relationship between measures of the adolescent mother's perception of her support network and her infant's scores on the Bayley Mental and Psychomotor Index.

Description of Subjects

The following tables present descriptive data on the single adolescent mother subjects and their 12-month old infants. The infants in this sample ranged in weight from 800 to 2240 grams, with the mean weight being 1415 grams. Only one infant weighed more than 1800 grams, the weight which is considered to be "at risk." All infants were classified as premature/high risk at birth due to lower birth weights or other medical complications. See Table 3 for a summary of birthweights of the infant subjects.

Table 3. Birthweights of infants born to single adolescent mothers (in grams).

Birthweight	Frequency	Percentage
800-1000	3	9.00
1001-1200	7	20.00
1201-1400	9	26.00
1401-1600	5	14.00
1601-1800	9	26.00
1801-2000	1	3.00
2001-2200	0	00.00
more than 2200	1	3.00
Total	35	100.00

Maternal Age

Table 4 presents data on maternal age which were available for 34 of the 35 subjects. Twelve of the mothers were 19 years of age and 11 were 18 years of age. Only three mothers were age 15. Therefore, two-thirds of the single adolescent mothers fell into the older category. Approximately 20 percent of the adolescent mothers were 16 years of age or under. The mean age for the mother subjects was 17.7 years of age.

Maternal Level of Education

Data on education completed by adolescent mother subjects were available for 34 of the 35 subjects, as shown in Table 5. Over half (18) of the mothers had completed 12 years or more of education. The mean level of maternal education was 10.9 years. Only three mothers had completed nine years or less.

Table 4. Ages of single adolescent mother subjects (by years).

Age	Frequency	Percentage
15	3	9.00
16	4	12.00
17	4	12.00
18	11	32.00
19	12	35.00
Total	34	100.00

Table 5. Years of education completed by mothers (in years).

Years of education	Frequency	Percentage
9 or less	3	9.00
10	6	18.00
11	7	21.00
12	16	47.00
13 or more	2	6.00
Total	34	100.00

Mother's Race

Of the 35 single adolescent mothers, 33 were black and 2 were white. Table 6 presents the data on the race of the mother subjects. This population sample reflected a rather homogeneous group of single adolescent mother subjects, both for race and socioeconomic status. All mothers were lower SES, as indicated by their responses on the personal data part of the questionnaire; all subjects indicated lower incomes.

Table 6. Race of single adolescent mother subjects.

Race	Number of Subjects	Percentage
Black	33	94.00
White	2	6.00
Other	0	00.00
Total	35	100.00

In summary, the subjects for this study were single adolescent mothers whose high-risk infants were placed in the Neonatal Intensive Care Unit at Shands Teaching Hospital, University of Florida, during the period from January 1, 1979, through December 31, 1980. All mothers were less than 20 years of age and were classified as 1) never married, 2) divorced, or 3) separated. Only medical files which were complete were included in this study.

Instrumentation

The instrument used to collect data on the adolescent mother's support system was a personal questionnaire administered to the mother when she brought her child for assessment. Sociodemographic information was coded from the personal interview and categorized into subheadings of measures of support. The following categories were obtained: 1) measures of communication efforts by the support network during the infant's hospitalization, 2) measures of the adolescent mother's accessibility to her support network, 3) measures of actual support network resources available to the mothers, and 4) measures of the mother's perceived support.

Listed below are the specific questions used in this study.

I. Measures of Indicators of Communication between the Support System of the Mother and the Infant during the Infant's Hospitalization. The total number of visits made by members of the support network was obtained from hospital records.

II. Measures of Mother's Accessibility to Support Network.

a. Do you own or have access to a car? YES NO

b. Do you have a telephone? YES NO

c. How difficult is it for you to get out and do what you need to do?

YES = very difficult; somewhat difficult; depends

NO = somewhat easy; very easy

III. Measures of Actual Support Available to the Adolescent Mother.

a. How many relatives/friends live around your area (adults)?

_____ total number

b. How many of these relative/friends can you count on in times of real need? _____ total number

c. Do you get together often with friends and relatives?

YES NO

d. How many times a week?

NOT OFTEN = never; rarely (up to once every few months)

OFTEN = sometimes (a few times a month to once a week); often (a few times a week); very frequently (every day)

e. Do you belong to any organizations such as social, religious, educational, or political groups?

____social ____religious ____educational ____political =

____total number of organizations

IV. Measures of Mother's Perception of Support Network Resources.

a. Does your present situation provide you with enough or not enough support? YES = enough, sometimes

NO = not enough; not at all

b. Do you feel you're overwhelmed with household tasks and children? NO = never; infrequently

YES = sometimes; often; all the time

c. How many times a month do you get away by yourself to do something you would like to do? ____(total)

d. Do you think this is enough time? NO = not enough

YES = enough or too much

e. On the whole, would you describe your present living situation as happy? NO = very unhappy; somewhat unhappy; neutral

YES = somewhat happy; very happy

Responses that were YES or NO were quantified by assigning a value of 0 to No and a value of +1 to Yes. A point biserial correlation coefficient was determined for each dichotomous response. The responses were categorized into four independent general support variables. Three of the support variables consisted of three or more measures. These measures were grouped by their correlation coefficients to form multiple correlation coefficients. These were 1) accessibility to support, 2) actual measures of support, and 3) the mother's perception of her support. The fourth independent variable, support by

the network during the infant's hospitalization, was quantified by totaling the actual number of visits made by the family during the infant's hospitalization. A numerical total was obtained, thus quantifying this independent variable for the purpose of analysis.

The instrument used to collect data on the infants' development was the Bayley Scales of Infant Development, Mental and Psychomotor Indexes. This instrument has been used in child development settings for over thirty years. Bayley (1969) reported a correlation of .60 between the Mental and Motor Scales. The split-half reliability coefficient for the Mental Scales was .88 and for the Motor Scale, .84. The coefficient of correlation between scores obtained on the Bayley and the Binet was .57, with considerable restriction on the range of scores on both tests, especially the Binet.

The mental scale is designed to assess sensory-perceptual acuities, discriminations, and the ability to respond to these; the early acquisition of "object constancy" and memory, learning and problem-solving ability; vocalizations and the beginnings of verbal communication; and early evidence of the ability to form generalizations and classifications. Results of the Mental Scale are expressed as a standard score, the MDI, or Mental Developmental Index.

The Motor Scale is designed to provide a measure of the degree of control of the body, coordination of the large muscles and finer manipulatory skills of the hands and fingers. The Motor Scale is specifically directed toward behaviors reflecting motor coordination and skills and is not concerned with "mental" or "intelligent" functions. Results of administration of the Motor Scale are expressed

as a standard score, the PDI, or Psychomotor Development Index (Bayley, 1969, p. 3).

Data Collection

The data for this study were obtained from medical files at the Children's Developmental Services Project at Shands Teaching Hospital, Gainesville, Florida. Sociodemographic data on the adolescent mothers were taken from the personal questionnaire administered to the mother when her infant was six months old. These data consist of 1) measures of communication efforts made by the support network during the infant's hospitalization, 2) measures of the mother's accessibility to her support network, 3) measures of the mother's actual support resources, and 4) measures of the mother's perception of her support network. In addition, two other secondary variables were studied descriptively. They were 1) measures of the mother's self-concept and 2) the mother's life stress score for the previous year. Data on the infants were obtained from medical files at Shands Teaching Hospital. Bayley Scales for Physical and Psychomotor Development were obtained, and these scores were taken from administration of the Bayley on the infants at 12 months of age. The data were obtained from complete medical folders from January 1, 1979, through December 31, 1980. The researcher signed a confidentiality oath in conjunction with the Children's Research Project. All subjects gave approval for the use of these data, with confidentiality assured by the researchers.

Data Analysis--Regression Analysis

Regression analysis is a statistical tool for evaluating the relationship between one or more independent variables, X_1, X_2, . . . X_n to a single continuous dependent variable Y. Practical applications of regression analysis include the following:

1) When the investigator wishes to characterize the relationship between the dependent and the independent variables in the sense of determining the extent, direction, and strength of the association among these variables.

2) The researcher desires to describe quantitatively or qualitatively the relationship between X_1, X_2, . . . X_n and Y, while controlling for the effects of other variables C_1, C_2, . . . C_p, which may have an important relationship with the dependent variables.

3) The researcher wants to determine which of several independent variables are important and which are not for describing or predicting a dependent variable. Also, the researcher may desire to rank independent variables in their order of importance (Kleinbaum and Kupper, 1978, p. 34-35).

Independent Variables in this Study

As indicated earlier in this chapter, the four independent variables used in this study were made up of several measures, each with the exception of the first independent variable, which was a measure of support during the hospitalization of the infant; this measure consisted of one measure--the total number of visits by the family during the infant's hospitalization. Each of the three other

independent variables consisted of three or more measures. These four variables and the measures included in each one are now presented.

Hypothesis I: Communication Efforts by the Support Network During the Infant's Hospitalization.

X_1 = total number of visits made by the support network during the infant's hospitalization in the NICU.

Hypothesis II: Measures of the Adolescent Mother's Accessibility to her Support Network.

X_2 = adolescent mother's access to a car.

X_3 = adolescent mother's access to a telephone.

X_4 = adolescent mother's perception of difficulty to get out and make contact with her support network.

Hypothesis III: Measures of Adolescent Mother's Actual Support Network.

X_5 = number of relatives/friends living in the immediate area (adults).

X_6 = number of relatives/friends living in the immediate area that can be counted on in times of real need.

X_7 = measures of frequency with which adolescent mother gets together with relatives/friends.

X_8 = frequency, per week, of mother's contact with support network.

X_9 = number of organizations to which adolescent mother belongs.

Hypothesis IV: Measures of Adolescent Mother's Perception of Adequacy of Support Network.

X_{10} = measure of mother's perception of adequacy of support network.

X_{11} = mother's perception of being overwhelmed with household tasks and childcare responsibilities.

X_{12} = mother's perception of frequency of time to be by herself.

X_{13} = mother's estimation of adequacy of time to be by herself.

X_{14} = mother's perception of present living situation as happy.

Secondary Variables for Descriptive Study

Five measures of self-concept were studied for descriptive purposes. These included the mother's perception of her health, physical fitness, body shape, weight and life in general. The second variable, life stress, was studied by obtaining a life stress score from the questionnaire completed by the mothers. This score indicated the types of stressful events the mother had experienced during the past 12 months prior to completing the questionnaire. A total stress score was also obtained. See Appendix for example of questions for these two secondary measures.

Dependent Variables

Y_1 = Mental Development Index from the Bayley Scales of Infant Development, administered to the infant at 12 months of age.

Y_2 = Physical Development Index from the Bayley Scales of Infant Development, administered to the infant at 12 months

Control Variables

C_1 = mother's age, in years.

C_2 = mother's level of education, in years.

C_3 = birthweight of infant, in grams.

C_4 = infant's length of stay in hospital, in days.

These four control variables were included in the initial inter-correlational matrix.

Regression Models for this Study

After an initial analysis which included the four control variables cited above and which included performing reduced, full, and partial analyses, the researcher decided to eliminate the four control variables. None of the four variables were significantly related to the dependent variables; therefore, it was not helpful to include them in the final regression analysis. The final regression analysis consisted of performing regression analysis on simple models and doing a Max-R and a stepwise regression analysis which included all of the independent variables.

Listed below are the regression models used in this study.

Hypothesis I: There will be no significant linear relationship between measures of communication efforts made by the support network during the infant's hospitalization and the MDI and PDI scores attained by the infant at 12 months of age.

Regression Model Utilized: $Y = B_0 + B_1X_1 + E$

Hypothesis II: There will be no significant linear relationship between measures of the mother's accessibility to her support network and the MDI and PDI scores attained by the infant at 12 months of age.

Regression Model Utilized: $Y = B_0 - B_2X_2 + B_3X_3 + B_4X_4 + E$

Hypothesis III: There will be no significant linear relationship between measures of the mother's actual support network resources and the MID and PDI scores attained by the infant at 12 months of age.

Regression Model Utilized: $Y = B_0 + B_5X_5 + B_6X_6 + B_7X_7 + B_8X_8 + B_2X_9 + E$

Hypothesis IV: There will be no significant linear relationships between measures of the mother's perception of her support and the MDI and PDI scores attained by the infant at 12 months of age.

Regression Model Utilized: $Y = B_0 + B_{10}X_{10} + B_{11}X_{11} + B_{12}X_{12} + B_{13}X_{13} + B_{14}X_{14} = E$

Analysis Procedure

The initial intercorrelational study indicated that none of the four control variables were significantly related to either of the two dependent variables in the study--the MDI and the PDI scores of the infants at 12 months of age. A decision was made to delete the four control variables from the remaining analysis. Therefore, the use of simple linear regression models was indicated.

A simple linear regression model was developed in order to test each of the four major hypotheses. Three of the four regression equations consisted of three or more measures, grouped together to form a multiple correlation coefficient. Therefore, multiple

regression was utilized in testing Hypotheses II, III, and IV. The F-values and levels of significance were determined in order to test the four hypotheses.

Limitation of Methodology

Correlational study has been utilized extensively in educational research. It is especially helpful because it allows the researcher to study the extent of relationship existing between variables. Correlational studies enable one to determine the extent to which variations in one variable are associated with variations in another (Ary, 1979).

There are limitations to correlational studies. Correlational findings indicate relationships between or in association with variables but do not imply a causal relationship. One cannot interpret findings in correlational studies to be "cause and effect." Secondly, the coefficient of correlation is not to be interpreted as an absolute fact. Values of r are found for sample cases, and the extent of relationship found in one sample need not necessarily be the same found in another sample from the same population. Additional limitations to this study include those associated with the measurement procedure. Data were collected from the adolescent mothers in a self-report format. Dichotomization of responses may have limited the accuracy of the data. The sample size is also a limitation. Restrictions in the range of data and the reliability of correlation coefficients are limitations due to small sample size.

Summary

Bronfenbrenner (1974) and Cochran and Brassard (1979) have argued that the social support network of the family has a major influence on the development of the child. Relatively few studies have focused on measures of the family's support system and specific measures of child development. This study focused on indicators of social support of single adolescent mothers and their relationships to specific measures of cognitive and physical development of their infants. Data on the social support system of the mothers were taken from personal interviews of the mothers which were administered to the mother when her infant was six months old. Data on the infants are measures of cognitive and psychomotor development as determined by the Bayley Scales administered when the infants were 12 months old.

Linear regression and stepwise regression procedures were utilized to study the relationship between measures of infant cognitive and psychomotor development and specific measures of social support networks of the mothers.

CHAPTER IV
RESULTS

Preliminary Analysis

The purpose of this study was to investigate 1) the types of support networks utilized by single adolescent mothers and the frequency with which these support networks are used, 2) the relationship of four primary measures of support network resources to cognitive and psychomotor measures of infants of the adolescent mothers at 12 months of age, and 3) measures of self-concept and life stress of the adolescent mother subjects.

This chapter includes the following: 1) a description of the types of support network resources utilized by single adolescent mothers and the frequency with which these support network resources were used, 2) a presentation of four major hypotheses which studied the relationship between the use of support network resources of 35 single adolescent mothers and the Bayley scores of Mental and Physical Development of the infants at 12 months of age, and 3) a description of the measures of self-concept and life stress of the adolescent mother subjects.

The Bayley Scales of Infant Development were administered to each infant at his/her 12 month evaluation. Data were availaable on 34 of the 35 infant subjects. Table 7 shows that scores ranged from 50 to 150 on the Mental Development Index (MDI) and from 29 to 138 on

the Physical Development Index (PDI). Nearly one-third of the MDI scores fell into the 91-110 range, which is considered a "normal" or average range. Seventeen infants had MDI scores above 110. This represented one half of the infant population. The mean MDI score was 109.5

Infant Scores

Table 7. Distribution of the Bayley MDI and PDI scores of infants at 12 months of age.

	MDI		PDI	
Scores	Frequency	Percentage	Frequency	Percentage
Data unavailable	1	3.00	1	3.00
50 or less	1	3.00	2	6.00
51-70	2	6.00	1	3.00
71-90	2	6.00	4	11.00
91-110	12	34.00	15	43.00
110-130	13	37.00	10	29.00
131 or more	4	11.00	2	6.00
Total	35	100.00	35	100.00

Infants scored more toward the average on the Physical Development Index. Twenty-five scored between 91 and 130. Only two scored above the 130 point. This indicated that infant scores fell into more of an "average" range on PDI scores and more "above average" on MDI scores. The mean PDI score was 99.4, 10 points below the mean of the MDI scores.

Hospital Visits

Data on hospital visits made by the family network during the infant's hospitalization were available on 30 of the 35 infant subjects. Fourteen infants, nearly one-half, received six to ten visits during their hospitalization. Eight received five or less visits while eight received more than ten visits. A visit was recorded each time a member of the immediate family or combination of members of the immediate family made a visit to the infant. Data were collected by the Neonatal Intensive Care Unit staff. See Table 8.

Table 8. Number of visits made by infant's immediate family during infant's hospitalization.

Number of visits	Frequency	Percentage
No response	5	14.00
0 to 5	8	23.00
6 to 10	14	40.00
11 to 15	4	11.00
16 to 20	1	3.00
21 to 25	3	9.00
Total	35	100.00

The mean number of visits made by support network members was 10 with a range of 1 to 22. The number of days in the hospital ranged from 10 to 82 days with an average of 31 days, as compared with an average of 5 days for normal infants.

Availability of Support Resources

Several questions sought to determine the availability of support resources to the single adolescent mother. Three questions asked were 1) do you have accessibility to a car? 2) do you have accessibility to a telephone? and 3) do you think it is difficult for you to get out and do the things you need to do?

Of the 35 respondents, 21 said they did not have accessibility to a car. Twenty-four of the 34 subjects responded that they did have accessibility to a telephone. This represents 70 percent of the total number of subjects, as shown in Table 9.

When asked if it were difficult to get out to do the things they needed to do, 20 of the 34 respondents answered "yes." This represents 59 percent of the subjects.

Actual Support Resources

Several questions sought to determine the extent of actual support resources available to single adolescent mothers in regards to relatives and friends. All 35 subjects responded to the question, "How many relatives and/or friends live in the immediate area (adult)?" Fifteen subjects responded that they had five or fewer relatives and/or friends in the immediate area. Of these, four reported having no adult friends and/or relatives in the immediate area. Six responded that they had from 6 to 10 relatives and/or friends living in the area, and 9 answered that they had 15 or less relatives and/or friends in the immediate area. Two responded that they had between 26 and 30, and only one subject reported having more than 35 relatives in the area. See Table 10 for these data.

Table 9. Support resources available to the adolescent mother.

Resource	Yes		No		No response		Total
	Frequency	Percent	Frequency	Percent	Frequency	Percent	
Car	14	40.0	21	60.0	0	0.00	35
Telephone	24	71.0	10	30.0	1	3.00	35
Difficult to get out	20	59.0	14	41.0	1	3.00	35

Table 10. Actual measures of support resources: Relatives in the area (adult).

Number of adult relatives and/or friends in the area	Frequency	Percentage
0	4	11.00
1 to 5	11	31.00
6 to 10	6	17.00
11 to 15	9	26.00
16 to 20	2	6.00
21 to 25	0	0.00
26 to 30	2	6.00
31 to 35	0	0.00
more than 35	1	3.00
Total	35	100.00

Support During Crisis

When asked how many of these relatives and/or friends could be counted on in times of crisis, 24 of the 33 respondents responded with "0-5." This represents 73 percent of the total group.

Frequency of Interaction

When the adolescent mothers were asked if they got together often with relatives and/or friends, 30 of the 34 subjects who responded said "yes," only 4 said "no." This represents 88 percent, a high percentage of the total group, as shown in Table 12.

Table 11. Number of relatives and/or friends mother can count on in times of crisis.

Number of adults mother can count on in crisis	Frequency	Percentage
0 to 5	24	69.00
6 to 10	6	17.00
11 to 15	2	6.00
16 to 20	0	0.00
21 to 25	0	0.00
26 to 30	0	0.00
31 to 35	1	3.00
No response	2	6.00
Total	35	100.00

Table 12. Does mother get together with relatives/friends often.

Response	Frequency	Percentage
Yes	30	86.00
No	4	11.00
No response	1	3.00
Total	35	100.00

Frequency of Interaction Per Week

The adolescent mothers were asked how many times per week they got together with relatives or friends. Responses were collapsed into the dichotomous responses of "not often" and "often." Those who responded with "never, rarely, or sometimes" were categorized into "not

often." Those who responded with a "few times per week" and "very frequently/every day" were categorized into "often."

Of the 35 mothers who responded, 23 said "not often" (never, rarely, or sometimes). This represents nearly 66 percent of the responses; these responses seem to contradict the answer given in the previous question, which was a general question as to whether the adolescent got together with relatives and/or friends often. It seems that when the questions became more specific or focused, the mothers responded that, in fact, they did not get together with the relatives and/or friends very many times per week. Table 13 illustrates these findings.

Table 13. Times per week mother gets together with friends/relatives.

Response	Frequency	Percentage
Not often	23	66.00
Often	12	34.00
Total	35	100.00

Organizations

Organizations are thought to be positive forms of support for most people. This question sought to identify how many different organizations the adolescent mothers participated in. The most common organization identified by this population was the church. Twelve adolescent mothers responded that they participated in a religious organization or church. Only two reported being active in social

organizations, one in an educational organization, and none reported participating in a political organization. Twenty adolescent mothers did not participate in any type of organization, representing over one-half of the subjects. See Table 14.

Table 14. Types of organizations mothers participated in.

Type of organization	Frequency*	Percentage
No participation	20	54.00
Social organization	4	11.00
Religious organization	12	32.00
Political organization	0	00.00
Educational organization	1	3.00
Total	37	100.00

*One subject participated in more than one organization.

Perceptions of Support

Five questions sought to measure the adolescent mother's perceptions of her support network. When asked if their present situation provided them with enough support, 21 out of the 32 responding answered that they perceived their present situation to have enough support. That represents 65 percent or nearly two-thirds of the responses.

Thirty-one members responded to the question, "Do you feel overwhelmed with household tasks and children?" Twenty-two said "yes" while only nine said "no." Therefore, over 70 percent of these subjects indicated that they felt overwhelmed with household tasks and children.

Another question, "Do you have time to do things by yourself that you would like to do?" had 28 respondents. Half of these mothers indicated that they were able to get away by themselves two or less times per month. Nearly half indicated that they got away from three to five times per month.

When the adolescent mothers were asked if they thought this was enough time (in reference to the previous question), fully two-thirds of the respondents replied that they had enough time to get away by themselves each month. This indicates a perception that there are sufficient resources to allow them to do this.

The adolescent mothers were asked if their present living situations were happy. Thirty-two adolescent mothers responded to this question. Nearly 60 percent described their present living situations as being happy. In summary, five questions related to the mother's perception of her support were asked. The adolescent mothers responded favorably to all questions, except for one. "Do you feel overwhelmed with household tasks and children?" Over 70 percent responded with "yes" to this question. See Tables 15, 16, and 17 for these data.

Secondary Independent Variables

Data were collected on two secondary variables: adolescent mother's self-concept and her life stress. The researcher was curious about the young mothers' perceptions of themselves (self-concepts) and about the degree of life stress they had experienced during the year previous to their completion of the questionnaire. While the major purpose of collecting these data for the study was descriptive,

Table 15. Mother's perception of her support network.

Question	Yes		No		No response		Total
	Frequency	Percent	Frequency	Percent	Frequency	Percent	
Do you have enough support?	21	66.00	11	34.00	3	9.00	35
Do you feel overwhelmed by household tasks and child-rearing ?	22	71.00	9	29.00	4	11.00	35
Are you happy in your overall situation?	19	59.00	13	41.00	3	9.00	35

Table 16. Times per month to get away by yourself.

Times per month	Frequency	Percentage
Data unavailable	7	20.00
0- 2	14	40.00
3- 5	12	34.00
6- 8	1	3.00
9-11	1	3.00
Total	35	100.00

Table 17. Is this enough time to get away by yourself.

Response	Frequency	Percentage
Data unavailable	5	14.00
Yes	20	57.00
No	10	29.00
Total	35	100.00

further research is suggested utilizing these data in relationship to other variables.

Mother's Self-Concept

Five measures of self-concept were obtained from the adolescent mothers. A scale from 1-7 on five different measures was used. This was a continuous scale ranging from 1-7. Higher scores indicated a lower self-concept. Twenty-seven of the 35 adolescent mothers responded to the measure of self-concept regarding health. Over 40 percent rated themselves as having excellent health and 22 of the 27

ranked themselves in the top four ratings for health. Only one subject perceived herself as having poor health. In general, these subjects rated themselves as being in good to relatively good health. The mean health score was 2.26. See Table 18.

Table 18. Mother's perception of her own health.

Score	Frequency	Percentage
Data unavailable	8	23.00
1 (excellent)	12	34.00
2	4	11.00
3	6	17.00
4	4	11.00
5	0	0.00
6	0	0.00
7 (poor)	1	3.00
Total	35	100.00

When asked about her perception of her physical well-being, 28 subjects responded. Over 90 percent rated themselves from excellent to good on perception of well-being. This reflects a relatively positive sense of physical well-being. The mean score on physical well-being was 2.63. See Table 19.

As shown in Table 20, 25 subjects responded to the measure of perception of her own body. Of the 25 respondents to this question, nearly one-third rated perception of their bodies as excellent, and 88 percent rated their body perception in the four most positive rankings. This also reflects a relatively positive body image. The

Table 19. Mother's perception of her physical well-being.

Score	Frequency	Percentage
Data unavailable	8	23.00
1 (excellent)	7	20.00
2	6	17.00
3	6	17.00
4	7	20.00
5	0	0.00
6	1	3.00
7 (poor)	0	0.00
Total	35	100.00

Table 20. Mother's perception of her own body.

Score	Frequency	Percentage
Data unavailable	10	29.00
1 (excellent)	8	23.00
2	6	17.00
3	4	11.00
4	4	11.00
5	2	6.00
6	1	3.00
7 (poor)	0	0.00
Total	35	100.00

mean score for the adolescent mothers' perceptions of their own bodies was 2.52.

When asked about their perceptions of their weight, 27 adolescent mothers responded to this self-concept item. Over 25 percent said

that they perceived their weight to be excellent and nearly 70 percent responded that they perceived their weight to be very good to excellent. In terms of perceived weight, these adolescent mothers held very positive perceptions, as shown in Table 21. The mean score was 3.00.

Table 21. Mother's perception of her own weight.

Score	Frequency	Percentage
Data unavailable	8	23.00
1 (excellent)	7	20.00
2	5	14.00
3	7	20.00
4	3	9.00
5	2	6.00
6	0	0.00
7 (poor)	3	9.00
Total	35	100.00

The adolescent mothers were asked how they perceived their lives in general. Of the 27 respondents, over one-third said that they felt very positive about their lives in general. While 70 percent of the responses fell into the more positive categories, it is interesting to note that three of the mothers responded that they perceived their lives to be in a "poor" state. However, the mean score was 3.03, the highest average of any of the measures of self-concept. See Table 22 for these results.

In summary, an attempt to measure the adolescent mother's self-concept was made by asking them to characterize their health, body

Table 22. Mother's perception of her life in general.

Score	Frequency	Percentage
Data unavailable	8	23.00
1 (excellent	10	29.00
2	4	11.00
3	1	3.00
4	5	14.00
5	4	11.00
6	0	0.00
7 (poor)	3	9.00
Total	35	100.00

image, weight, physical well-being, and life in general. This was done by having the subjects indicate on a continuum from 1-7 their own perceptions of their self-concepts. In general, these single adolescent mothers described themselves in very positive terms. Three subjects marked their weight and life status in general as being "poor." However, a much larger proportion of the subjects marked responses that fell into the top four categories. The overall mean score for the five measures of self-concept was 2.71.

Life Stress

Another secondary variable was a measure of life stress. Twenty-five mothers completed the Holmes Stress Scale (1973) which was a part of the questionnaire completed by the subjects. As shown in Table 23, the stress scores were evenly distributed. There was a range of 5 to 260. Twenty percent fell into the 161-180 category. Most of the stress scores were moderate. The mean score was 119.72.

Table 23. Stress scores of adolescent mothers.

Score	Frequency	Percentage
Data unavailable	10	29.00
0- 20	2	6.00
21- 40	1	3.00
41- 60	1	3.00
61- 80	1	3.00
81-100	5	14.00
101-120	2	6.00
121-140	4	11.00
141-160	2	6.00
161-180	5	14.00
181-200	0	0.00
201-220	0	0.00
221-240	1	3.00
241-260	1	3.00
Total	35	100.00

Regression Analysis

Regression analysis was utilized in this study. Several preliminary steps were taken to analyze the dependent and independent variables. The initial procedure was to obtain an intercorrelational matrix, using both dependent variables--Mental Development Index scores and Psychomotor Development Index scores--and all independent variables, which were measures of support network resources of the single adolescent mothers. The independent variables were all included in the initial correlational matrix. Specifically, the four primary categories were 1) Measures of Communication Efforts by the Support Network

During the Infant's Hospitalization, 2) Measures of the Adolescent Mother's Accessibility to her Support Newtork, 3) Measures of Actaul Support Resources Available to the Adolescent Mothers, and 4) Measures of the Adolescent Mother's Perception of Her Support. Two secondary measures related to the adolescent mother's social support were included; they were 1) Measures of the Adolescent Mother's Self-Concept and 2) Measures of the Adolescent Mother's Life Stress.

The correlational matrix represents correlations between the dependent variables, between the independent variables, and between the dependent and independent variables. This preliminary correlational study was done in order to better understand the relationships that existed among all the variables, both dependent and independent. The researcher was especially interested in learning 1) which independent variables were most highly correlated with the two dependent variables and 2) which independent variables were most highly correlated with one another. If independent variables were highly correlated to one another, then some independent variables would be eliminated in order to increase power in the analysis.

The intercorrelational matrix code and the matrix are seen below. Note that the code listing includes the two dependent variables and the fourteen independent variables which were utilized in the hypothesis testing. The intercorrelational matrix is read by reading down the left-hand column initially and then reading to the right to determine the correlation between the two variables in question. For example, MDI has a correlation of 1.00 with MDI, 162 with the PDI score of the infant, .33 with the number of visits by the family, .17 with the availability of a car by the

adolescent mother, and so on. Correlations which were significant at the .05 level of probability or less are noted with an asterisk. Correlational matrices are helpful in providing an overview of the relationships that exist among the dependent and independent variables.

Correlational Code and Matrix

CORRELATIONAL MATRIX CODE

MDI = Infant's score on the Bayley Mental Development Index.

PDI = Infant's score on the Bayley Psychomotor Development Index.

NVF = Number of visits by family during infant's hospitalization at birth.

AVCAR = Availability of a car for the mother.

ATEL = Mother's access to a telephone.

DIFOUT = Mother's estimation of difficulty to get out to do the things she needs to do.

NREL = Number of adult relatives/friends in the immediate area.

COUNT = Number of adult relatives/friends in the immediate area that can be counted on in crisis.

TOG = Mother's estimation of general frequency of her interacion with adult friends/relatives.

FREQ = Frequency per week of mother's interaction with adult friends/relatives.

TORG = Total number of organizations the mother participates in.

ENSUPP = Mother's perception of adequacy of support system.

OVWH = Mother's perception of being overwhelmed by children and household tasks.

GETMH = Mother's perception of times to get away by herself per month.

SUFTIM = Mother's perception of the adequacy of her time to be alone.

HAPGEN = Mother's perception of her happiness with her life situation.

Table 24. Correlational matrix.

	MDI	PDI	NVF	AVCAR	DIFOUT	ATEL	NREL	COUNT	TOG	FREQ	TORG	ENSUP	OVWH	GETH	SUFTIM	HAPGEN
MDI	1.00	.62*	.33	.17	-.12	.10	.11	-.02	.06	.19	-.10	.06	-.25	.43*	.43*	.15
PDI	.62*	1.00	-.07	-.01	.22	.21	.18	.10	-.03	.12	-.28	.25	-.57*	.26	.20	.41
NVF	-.02	-.07	1.00	.07	-.14	.32	-.24	-.37	.26	.18	.19	-.19	.12	-.31	-.10	-.03
AVCAR	.18	.01	.07	1.00	.17	.24	.05	.20	-.28	-.27	.15	.11	-.17	.17	.20	.34
DIFOUT	-.02	-.22	-.14	.17	1.00	.12	.18	.07	-.13	.13	-.06	-.15	.08	-.18	-.29	-.30
ATEL	.10	.21	.32	.24	.12	1.00	-.03	-.14	.16	.20	.20	.57*	-.22	.06	.21	.28
NREL	.11	.18	-.24	.05	.18	-.03	1.00	.63*	-.39*	-.12	-.13	.06	.14	.37*	.01	-.21
COUNT	-.02	.10	-.37	.20	.07	-.14	.63*	1.00	-.23	-.02	-.14	.02	.04	-.07	-.06	.17
TOG	-.03	-.03	.26	-.28	-.13	.16	-.39*	-.23	1.00	.54*	.09	.21	.14	-.22	-.25	.29
FREQ	-.01	.12	-.18	-.27	.13	.20	-.12	-.02	.53*	1.00	.09	.22	-.10	.20	.00	-.43*
TORG	-.06	-.28	.04	.15	-.06	.20	-.13	-.14	.09	.09	.79*	.28	.24	.07	.00	-.20
ENSUP	.06	.25	-.19	.11	-.15	.57*	.06	.02	.21	.22	.28	1.00	-.29	.15	.24	.27
OVWH	-.25	-.57*	.12	-.17	.08	-.22	.14	.04	.14	.10	.24	-.29	1.00	.04	-.17	-.36
GETMH	.43*	.26	-.31	.17	-.18	.06	.37*	-.07	-.22	.20	.07	.16	.04	1.00	.54*	-.34
SUFTIM	.20	.20	-.10	.20	-.29	.21	.01	-.06	-.25	.00	.00	.24	-.17	.54*	1.00	.07
HAPGEN	.15	.41	.39	.34	-.30	.28	-.21	.17	-.29	-.43*	-.19	.27	-.36	-.34	.07	1.00

*Significant at the .05 level or better

Control Variables

A general linear regression analysis was completed in order to ascertain which, if any, control variables should be included in the final regression analysis. Four control variables were initially identified, based on previous research on premature infants born to adolescent mothers (Holstrum, 1979; Hofheimer, 1979). The four control variables investigated were 1) Mother's age at birth of infant (MAGE); 2) Mother's level of education, in years (YED); 3) Infant's birthweight, in grams (BWT); and 4) Number of days in the hospital (infant) (NDH). As can be seen in Table 25, the following correlations were obtained.

Table 25. Correlations of control and dependent variables.

Control variable	MDI	P-value	PDI	P-value
1) Mother's age	-.18	.33	-.09	.60
2) Mother's level of education	-.09	.62	-.31	.08
3) Infant's birthweight	.20	.25	.05	.78
4) Number of days in hospital	-.19	.32	-.09	.64

None of the four control variables were related significantly to the two dependent variables. Therefore, the researcher made a decision to eliminate the four control variables from further analysis.

In addition, a correlational matrix was obtained using quadratic forms of the four control variables to determine if a quadratic relationship existed between the four control variables and the two dependent variables, therefore accounting for more of the variance in the

MDI and PDI scores. As shown in Table 26, none of the four control variables was significantly correlated with the two dependent variables when quadratic forms of the control variables were used. Therefore, the researcher decided to 1) eliminate all four control variables in the regression study of the support network measures with the MDI and PDI scores and 2) to allow a linear relationship to explain the relationship between the independent variables and the two dependent variables.

Table 26. Correlation coefficients of four control variables in quadratic form.

	N	R	P-value
For MDI			
1) Mother's age	32	.18	.33
2) Number of days in hospital	29	-.26	.18
3) Birthweight of infant	33	.23	.19
4) Maternal years of education	32	-.15	.41
For PDI			
1) Mother's age	32	-.20	.26
2) Number of days in hospital	29	-.08	.66
3) Birthweight of Infants	33	.06	.75
4) Maternal years of education	32	-.33	.07

Hypotheses Tested

Four primary hypotheses were tested. The four primary hypotheses tested related to measures of support network resources. These four hypotheses and the results of the regression analyses are now presented.

HYPOTHESIS I: There will be no significant linear relationship between measures of in-hospital communication efforts by the support network and the Bayley scores of Mental and Psychomotor Development at 12 months of age.

For each mother-infant dyad, the number of actual visits made by the immediate family during the infant's hospitalization was obtained. These visits were limited to only the immediate family and were closely monitored and recorded by the NICU (Neonatal Intensive Care Unit) staff. The total number of visits made by the support network was designated as NVF. This independent variable was entered into the overall regression model--

MDI PDI = Number of Visits to the Infant by Support Network During Hospitalization.

Table 27 lists the R^2 for each of the simple regression models tested for MDI and PDI. The independent variable used in this analysis is a measure of the adolescent mother's support during the infant's hospitalization. More specifically, the total number of visits made by members of the support system was obtained and used as a measure of support for the adolescent mother.

As noted in Table 27, the simple regression model using Number of Visits by the Support Network members yielded a very small variance for both dependent variables, MDI and PDI. Neither of the dependent variables showed a statistically significant relationship with the independent variable, Number of Visits by the Family.

In summary, Hypothesis I was not rejected. There was no significant and linear relationship between the number of visits made by the family during the infant's hospitalization and the infant's scores on the Bayley Mental and Physical Development Index at 12 months of age.

Table 27. Linear regression of MDI and PDI by number of visits by support network family members during the infant's hospitalization.

Regression model analyzed	N	R^2	F	P > F
MDI = Number of visits	24	.0005	.01	.91
PDI = Number of visits	24	.0045	.10	.74

HYPOTHESIS II: There will be no significant linear relationship between measures of the mother's accessibility to her support network resources and her infant's scores of development on the Bayley Mental and Psychomotor Index at 12 months of age.

Hypothesis II tested the association of measures of the mother's accessibility to her support network with her infant's scores of development on the Bayley Mental and Psychomotor Index at 12 months of age. Regression models were analyzed for the simple linear models of Mental Development and Psychomotor Development with the three measures of the mother's accessibility to her support network. (See Appendix for examples of these three measures.) As shown in Table 28, the proportions of variance explained by the regression of both MDI and PDI were both small, .08 and .10, respectively. The F values obtained from these analyses were both nonsignificant. Therefore, the results of the linear regression analysis failed to reject Hypothesis II. There was no significant linear relationship between measures of the mother's accessibility to her support network and her infant's scores of development on the Bayley Mental and Psychomotor Development Index at 12 months of age.

Table 28. Linear regression of MDI and PDI by measures of the mother's accessibility to her support network resources.

Regression Model Analyzed	N	R^2	F	P > F
MDI = Three measures of accessibility*	32	.08	.84	.482
PDI = Three measures of accessibility	32	.10	1.16	.342

*See Appendix for examples of these three measures.

HYPOTHESIS III: There will be no significant linear relationship between measures of the adolescent mother's actual support network and her infant's scores on the Bayley Mental and Psychomotor Index at 12 months of age.

As shown in Table 29, the linear regression analysis of the measures of the adolescent mother's actual support network with the infant's scores on the Bayley Scale of Infant Development, Mental and Psychomotor Indexes, yielded R^2's of .026 and .142, respectively. The F values for both analyses were nonsignificant. Therefore, the researcher failed to reject Hypothesis III. There was no significant linear relationship between measures of the adolescent mother's actual support network and her infant's scores on the Bayley Scales of Infant Development, Mental and Psychomotor Index, at 12 months of age.

Table 29. Linear regression of MDI and PDI by measures of the adolescent mother's actual support network resources.

Regression Models Analyzed	N	R^2	F	P > F
MDI = Five measures of actual support*	32	.026	.15	.979
PDI = Five measures of actual support	32	.142	.90	.497

*See Appendix for examples of these measures.

HYPOTHESIS IV: There will be no significant linear relationship between measures of the adolescent mother's perception of her support network and the infant's scores on the Bayley Mental and Psychomotor Index at 12 months of age.

Five measures of the adolescent mother's perception of her support were utilized in this analysis. As shown in Table 30, these five measures included the mother's perception of the adequacy of her support, her perception of being overwhelmed with household tasks and children, her perception of her amount of time to be by herself, the adequacy of that time to be by herself, and her perception of her own happiness in regards to her living situation.

The linear regression of the MDI scores with the five measures of the mother's perception of her support yielded an R^2 of .25 and an F value of 1.17. This finding was nonsignificant. Therefore, Hypothesis IV, as related to the MDI, was not rejected. There was no significant linear relationship between the MDI scores and the five measures of the mother's perception of her support network.

The linear regression of the PDI scores with the five measures of the mother's perception of her support network yielded an R^2 of .53 with an F value of 4.02, significant at the .012 level. Therefore, Hypothesis IV, as related to the PDI regression analysis, was rejected. There was a significant relationship between the PDI scores of the infants and the five measures of the mother's perception of her support network.

Listed in Table 30 are the Type I and Type IV Sums of Squares. Results for special Type I and Type IV Sums of Squares provided useful information. The Type I Sums of Squares measured incremental sums of squares for the regression model as each of the five variables was

added. The Type IV Sums of Squares was the sum of squares due to adding each variable last in the model.

Table 30. Linear regression of MDI and PDI by measures of adolescent mother's perception of her support network.

Regression models analyzed	N	R^2	F	P > F
MDI = Five measures of mother's perception of her support	23	.25	1.17	.363
PDI = Five measures of mother's perception of her support*	23	.53	4.02	.012**

Type I Sums of Squares

Variable	Sums of Squares	F-value	P > F
GETMH	166.105	1.03	.322
SUFTIM	394.888	2.46	.134
ENSUPP	1144.50	7.13	.016**
OVWH	1209.29	7.53	.013**
HAPGEN	312.86	1.95	.80

Type IV Sums of Squares

Variable	Sums of Squares	F-value	P > F
GETMH	158.46	.99	.33
SUFTIM	3.16	.02	.89
ENSUPP	175.23	1.09	.31
OVWH	1018.97	6.35	.02**
HAPGEN	312.86	1.95	.18

*See Appendix for examples of these measures.
**Significant at the .05 level.

As noted, two variables had F values of significance in the Type I Sums of Squares. The mother's perception of the adequacy of her support (ENSUPP) yielded an F-value of 7.13, significant at the .01 level. The second variable, a measure of whether the mother felt

overwhelmed by her childrearing responsibilities and household tasks, (OVWH), yielded an F-value which was 7.53, also significant at the .01 level.

In the Type IV Sums of Squares, only one variable yielded an F-value which was signifcant; the variable OVWH, the mother's perception of being overwhelmed by childrearing responsibilities and household tasks, yielded an F value of 6.35, significant at the .02 level.

Stepwise Regression Analyses

Two stepwise regression procedures were conducted. In the first stepwise analysis, a regression model was entered that included both dependent variables, MDI and PDI, and all of the independent variables. A "Max-R" procedure was conducted in which all of the independent variables were sorted according to maximum contribution to the variance of each of the two dependent variables. In this procedure, the computer sorted all of the independent variables in many different combinations, arranging the variables in a descending order of contribution to the variances of MDI and PDI. Listed in Table 31 are the best models as determined by the Max-R procedure.

The best models for independent variables in relation to PDI (Physical Development Index) scores were also obtained. Again, the regression model entered included the dependent variable, PDI, and all of the independent variables. This sorting procedure yielded a series of models which accounted for the greatest amount of variance in PDI scores. Table 32 illustrates these results.

Table 31. Stepwise regression models for MDI--Max R procedure.

Best model	Variables included	R^2
One Variable Model	Mother' Perception of Enough Support	.250
Two Variable Model	Number of Visits by Family Mother's Happiness in General	.459
Three Variable Model	Number of Visits by Family Mother's Happiness in General Mother's Self-Concept: Physical Well-Being	.614
Four Variable Model	Number of Visits by Family Number of Relatives in Area Mother's Happiness in General Mother's Self-Concept: Physical Well-Being	.698
Five Variable Model	Number of Visits by Family Mother's Happiness in General Mother's Self-Concept: Physical Well-Being Mother's Self Concept: Weight Mother's Self-Concept: Life in General	.871
Six Variable Model	Number of Visits by Family Get Together Each Month Mother's Happiness in General Mother's Self-Concept: Weight Mother's Self-Concept: Life in General	.912
Seven Variable Model	Number of Visits by Family Get Together Each Month Mother's Happiness in General Mother's Self-Concept: Physical Mother's Self-Concept: Weight Mother's Self-Concept: Life Stress Score of Mother	.944

Table 32. Stepwise regression models for PDI--Max R procedure

Best model	Variables included	R^2
One Variable Model	Mother's Perception of Enough Support	.442
Two Variable Model	Mother's Feeling of Being Overwhelmed Mother's Self-Concept: Life in General	.573
Three Variable Model	Availability of a Car Number of Relatives Mother's Happiness in General Mother's Self-Concept: Life in General	.728
Four Variable Model	Availability of a Car Number of Relatives in Area Mother's Happiness in General Mother's Self-Concept: Life in General	.795
Five Variable Model	Availability of a Car Availability of a Telephone Number of Relatives in Area Mother's Happiness in General Mother's Self-Concept: Life in General	.811
Six Variable Model	Availability of a Car Number of Relatives in Area Mother's Feeling of Being Overwhelmed Mother's Happiness in General Mother's Self-Concept: Life in General Mother's Stress Score	.848
Seven Variable Model	Availability of a Car Availability of a Telephone Number of Relatives in Area Mother's Feelings of Being Overwhelmed Mother's Happiness in General Mother's Self-Concept: Life in General Mother's Life Stress Score	.866

The second regression analysis involved identifying those independent variables which made a significant contribution to the variance of MDI and PDI at the .15 level. For each of the dependent variables, the only independent variable which made such a contribution was "enough support," which was a measure of the mother's perception of the adequacy of her support system. For MDI, the F-value was 3.94, significant at the .07 level. For PDI, the F-value was 9.51, significant at the .0095 level.

CHAPTER V
DISCUSSION, SUMMARY, AND CONCLUSIONS

Discussion of Results

This chapter discusses the results of the study. Conclusions are drawn and recommendations for further research are suggested.

Infant Scores

The scores from evaluation of the infant subjects with the Bayley Scales of Mental and Physical Development were higher than the researcher had anticipated. The literature suggests that the neonatal outcomes for infants born to very young mothers are indeed negative. Studies by numerous researchers have reinforced the idea that babies born to teenage mothers are "at risk" (Field, 1981; Holstrum, 1979; and Hofheimer, 1979). The reasons for this negative outcome for infants born to teenage mothers are complex. The teenage population is usually characterized by low socioeconomic status, poor nutrition (not only for financial reasons but also due to cultural idiosyncrasies), increased illegitimacy, lack of prenatal care, as well as a higher rate of pregnancy and delivery complications (Monkus, 1981). Quay (1981) and Oppel and Royston (1971) report that teenage mothers are more likely to give birth to less psychologically competent offspring. Browman (1981) stated that demographic variables of ethnicity and SES play prominent roles in birth weights of infants--not just maternal age.

In this study, the scores on the MDI (Mental Development Index) ranged from 50 to 150. Nearly one-third of the MDI scores fell into the 91-110 range, which is considered a "normal" or average range. More significantly, 17 infants had MDI scores above 110. This represented one-half of the infant population. Clearly, over two-thirds of the infants scored in the normal or above average range.

The reasons for these higher scores may be complex. A major factor may be the age of the adolescent mothers. Two-thirds of these mothers were 18 and 19 years of age, which is clearly in the upper age bracket for adolescence. The infants' birthweights were in the lower range. Nearly all of the infants were 1800 grams or below at birth. This researcher suggests that future study be done on this infant population to ascertain more clearly the positive forces which are impacting their development. Also, a follow-up study might be conducted that investigates the developmental scores made by these infants at ages 24 and 36 months.

The infants scored more toward the average on the Psychomotor test. Twenty-five scored between 91 and 130, and only two scored above the 120 point. The infants seem to have more positive cognitive development as compared to physical development, at this particular point in time. However, the psychomotor development scores clearly fell into the normal or average range.

Other possible explanations for the relatively high developmental scores were considered by the researcher. Inflated testing scores were not thought to be a reasonable explanation since interrater reliability among the test administrators has been established by the Children's Developmental Clinic. Formal intervention procedures

were considered as a possible explanation. When these data have been organized and quantified, follow-up studies of these infant subjects would be appropriate. Other factors considered by the researcher included parental cognitive levels. Data on this variable were not available.

Hospital Visits

The total number of hospital visits made by members of the support network during the infant's hospitalization was obtained from hospital records. Data were available for 30 of the infants. Of these, 14 had 6 to 10 visits during hospitalization. This represented nearly one-half of the subjects. The data reflected a rather steady routine of visitation on the part of the support network and may be indicative of the quality of support that these infants continued to receive after departure from the hospital. The number of days of hospitalization of the infant certainly played a part in the number of hospital visits made by the support network members. Longer stays in the hospital required more contacts by the network. Therefore, in the initial analysis of this study, the number of days in the hospital for the infant was used as a control variable.

Availability of Support Resources

Several questions sought to determine the accessibility of the adolescent mother to her support network. When asked if they had accessibility to a car, 21 of the 35 respondents said they did not. This represents 60 percent of the responses and may indicate that many of these mothers did not own their own vehicle or did not have access

to someone else's. This may be a significant finding. If lower SES, black, single adolescent mothers do not have access to transportation, does this limit their potential for interaction with others? Does this contribute to feelings of isolation? These questions need to be pursued, perhaps with a larger sample. Also, a comparative study of single adolescent mothers' accessibility to support resources, based on SES, might also be helpful in providing information on special needs of teenage mothers. Of special interest would be the accessibility of public transportation, such as bus lines, to this population.

Twenty-four of the 34 subjects responded that they had accessibility to a telephone. This represents over 70 percent of the subjects and indicates that the telephone is still a common means of accessibility to support, even among this sample of lower SES subjects. Intervention may be conducted via the telephone in the form of hot lines for crisis situations or parent assistance programs which have volunteers to maintain contact with young, relatively isolated parents. The high accessibility of this population to a telephone was reassuring to this researcher.

The third question asked the subjects if it were difficult for them to get out and do the things they needed to do. Twenty of the respondents answered "yes." This represents nearly 60 percent of the total subjects responding. The perception that it is difficult to get out to do things may be an important one. It may also indicate that telephone accessibility alone is not adequate and that physical forms of accessibility--such as cars, buses, or other forms of transportation--may be more important to these young mothers.

In summary, most of these mothers had ready access to a telephone but not a car. Most of them perceived it was difficult for them to get out and do the things they need to do. The literature supports the notion that isolation, or lack of accessibility to support resources, does have negative consequences. Caplan (1974) stated, " . . . the concept of support systems has focused on the health-promoting forces at the person-to-person level and the social level which enable people to master the challenges and strains in their lives" (p. 5-6). Gourash (1978) concluded from his research that help-seeking is a critical aspect in the nuclear family's ability to cope and survive in times of crisis. Finally, Garbarino (1976) found that limited economic conditions, along with isolation, contributed to the etiology of child abuse and maltreatment. Clearly, the feelings of isolation experienced by these mothers need to be addressed in terms of intervention.

Actual Support Resources

Several questions dealt with measures of actual support resources available to these adolescent mothers. When asked, "How many friends and relatives (adults) live in the immediate area?" all 35 subjects responded. Fifteen said that they had five or fewer relatives and friends in the immediate area. This represents 43 percent of all subjects. Six said they had from 6 to 10 relatives and friends living in the area, and 9 answered they had 11 to 15. Therefore, nearly two-thirds of the respondents answered that they had 15 or less relatives and friends living in the immediate area. Two reported having between

26 and 30; only one subject reported having more than 35 relatives and friends in the area. Four mothers reported having no relatives in the area.

Nearly half of the mothers reported having five or less relatives in the immediate area. The literature supports the fact that most black, lower SES families have large extended families. Over one-fourth of the subjects reported having 11-15 relatives or friends in the area. Clearly, some of the subjects did have extensive family support potential. Perhaps a more pertinent question for further research is not merely the actual numbers of people available for assistance but the mother's perception of available support. This question is addressed later in this study.

Another question asked the mothers how many of the relatives or friends could be counted on in times of crisis. Of the 34 respondents, 24 said "0-5." This represented 73 percent of the total group and corresponded with the responses given in the previous question. Another 18 percent stated that they could count on from six to ten people in times of crisis. Again, the real question may not be how many people can the mother count on in crisis but rather, how does the mother perceive the adequacy of her support in time of crisis.

When the adolescent mothers were asked if they got together often with relatives or friends, 30 of the 34 subjects who responded said "yes," and only 4 said "no." This represents a high percentage--88 percent. This finding may be significant. In contrast to their answer of limited accessibility to a car, these subjects reflected a rather high degree of interaction with relatives or friends. One wonders how these interactions occur. Do relatives or friends take the

initiative? Do they also provide transportation for these young mothers? Further study of the lifestyles of these mothers is needed in order to better understand the nature of these interactions.

A follow-up question to the previous one asked the mothers the frequency of interaction each week that they had with friends or relatives. Responses were collapsed into dichotomous responses of "not often" and "often." Those who responded with "never, rarely, or sometimes" were categorized into "not often." Those who responded with "a few times per week" and "very frequently/everyday" were categorized into "often." Of the 35 respondents, 23 said "not often" (never, rarely, or sometimes). This represents nearly two-thirds of the responses. These responses seemed to contradict the answers given in the previous question, which was a general question as to whether the adolescent mother got together with relatives or friends often. It seems that when the question became more specific, the mothers responded that, in fact, they did not get together often each week with their relatives or friends but still perceived that the interaction was very adequate. Self-reported data have limitations; perhaps this is an example of questions not being clearly stated or open to various interpretations.

Organizations

A broader definition of support systems or networks includes various types of organizations. Membership in organizations can be a measure of community involvement. Swick, Brown, and Watson (1980) found that neighborhoods which have a higher degree of social interaction are perceived by residents to be more supportive. On the other

hand, McKinlay (1973) found that subjects who were more intricately woven into a family support system did not utilize medical facilities as frequently as did subjects who were not intricately bound to a close family system. Bronfenbrenner's (1974) ecological theory and model of child development characterizes the family unit as a system, influenced by various neighborhood groups, community agencies, voluntary associations, government offices and policies, as well as by broad cultural, ideological, and political systems. Thus the role of organizations and community agencies in the shaping of human development is still in need of further study.

This researcher was curious about the level of involvement in organizations of these young, single adolescent mothers. Each subject was asked to identify how many organizations she participated in and what types of organizations she belonged to. Over half of the subjects responded to this question with an answer of nonparticipation. Two reported they were members of social organizations; 12 stated they participated in religious groups or the church. One stated she belonged to an educational organization and none of the subjects reported having participated in a political organization. It is interesting to note that the most commonly reported type of organizational involvement was religious. Perhaps this has implications for intervention programs. Could more parenting education be done through the avenues of church-related groups? Could community educational programs be offered at church locations? Is the lack of involvement in organizations by these subjects representative of most adolescent females or only of lower SES adolescent females? Certainly further study is suggested in order to better understand the role of organizations on the

development of young mothers. Perhaps the lack of organizational involvement is an indicator of relative social isolation for these young mothers.

Perceptions of Support

Five questions related to how the young mother perceived her support network. When asked if their present situation provided them with enough support, 21 of the 32 respondents answered that they perceived their present situation to have enough support. That represents 65 percent or nearly two-thirds of the total responses. This may be a significant finding. If indeed these young single mothers with "at risk" infants did perceive their present situations to have enough support, then support from family and other sources must be relatively strong.

When asked if they felt overwhelmed with household tasks and children, 22 mothers said "yes" while only 9 said "no." Therefore, over 70 percent of these subjects indicated that they felt overwhelmed with household tasks and children. This seemed to contradict the previous responses which indicated the mothers felt their current situation had adequate support. Perhaps the feelings of being overwhelmed with household tasks and children are common feelings among all mothers. Certainly a comparative study of mothers who vary in age, SES, and marital status would be helpful in knowing if these feelings are common. If, indeed, 70 percent of most single adolescent mothers feel overwhelmed with their childbearing responsibilities, then the need for early intervention is surely indicated.

When asked how many times they were able to get away each month to do something they wanted to do, half of the 28 respondents said from 0-2 times per month and 12 reported from 3-5 times per month. Perhaps more importantly, 20 of the 30 respondents to the second question reported that they perceived they had adequate opportunity to get away by themselves. Again, the mother's perception of the adequacy of time to herself may be a more important measure than the actual numbers of times per month reported by the mother.

Secondary Variables

To further understand these adolescent mothers, the researcher decided to study two additional variables--measures of self-concept of the mothers and measures of life stress. These measures were included for descriptive purposes only. However, further research may be indicated in order to better understand the relationship of these two variables to the infant's qualitative development. Recent research by Held (1981) and Colletta, Hadler, and Gregg (1981) found that interval vs. external locus of control was related to the coping styles of young mothers. Held (1981) studied three types of intervention programs for adolescent mothers and correlated measures of self-esteem with each program type.

In this study, five measures of self-concept were obtained from the adolescent mother data. Each measure was on a continuous scale of 1-7, with 1 being equal to "excellent" and 7 being equal to "poor."

The first measure was a measure of the adolescent mother's perception of her own health. Of 27 respondents, 12 rated themselves as "excellent." In fact, 22 of the 27 respondents ranked themselves in

the top three categories. This reflects a very positive concept of personal health.

When asked about her perception of her physical well-being, 27 subjects responded. Over 94 percent rated themselves in the top four categories. Again, the adolescent mothers rated themselves highly in relation to their self-concept of physical well-being.

Twenty-five subjects responded to the measure of perception of their own bodies. Nearly one-third rated their perception of the bodies as excellent and nearly 90 percent rated their body perception in the top four categories. Twelve percent rated themselves in the lower three categories, significantly more than had rated themselves in the lower categories in the first two measures of self-concept. While the responses were generally positive, more mothers did express negative feelings about their own bodies than they did for physical well-being or health.

When asked about their perceptions of their weight, 27 adolescent mothers responded. Nineteen rated their weight perceptions in the top three categories while five rated themselves in the lower three categories. While most of the responses were relatively positive, there was still a definite response to the more negative categories. This pattern of negative response is similar to the previous question. There were more negative responses to perceptions of body and weight than to perceptions of health and physical well-being.

The final question related to self-concept asked the mothers to rank their perceptions of their lives in general. Of the 27 respondents, 10 scored themselves in the highest category and 4 in the next highest category. Fifteen mothers rated themselves in the three

highest categories. Since the scores fell nearly equally into the upper and lower categories, this may indicate less positive overall feelings about their life situations.

In summary, these adolescent mothers ranked their perceptions of themselves more highly in regards to health and well-being. On three measures of self-concept, the scores were notably lower--perceptions of weight, body, and life in general.

Life Stress Scores

Another secondary variable was included for descriptive purposes. Twenty-five adolescent mothers completed the Holmes and Rahe stress scale which was a part of the questionnaire completed by the mothers. This instrument seeks to ascertain, in a quantitative manner, the amount of stress experienced by an individual during the previous 12 months. Higher scores indicate higher levels of stress experienced by the subject. The stress scores of these adolescent mother subjects were evenly distributed. There was a range of 5 to 260. Twenty percent fell into the 81-100 category and 20 percent fell into the 161-180 category. Most of the stress scores fell into the moderate range. Therefore, the stress scale data did not produce scores that were unusually high or low.

One purpose of studying the descriptive data was to ascertain whether single adolescent mothers experienced unusually high levels of stress. The data indicated that this single adolescent mother population did not experience unusually high levels of stress. Cobb (1976) identified support as a moderator of life stress. Further study on this single adolescent population might provide more complete

information on the types of life stress that are most common to this population and which forms of support modify stress most effectively.

Regression Analysis

The initial step in the regression analysis was to obtain an intercorrelational matrix. All variables were included in this matrix. The two dependent variables were the MDI and PDI scores for each infant subject obtained at the infant's 12 month evaluation with the Bayley Scales of Infant Development. The independent variables consisted of 14 measures of support network resources obtained from the questionnaire administered to the mother when the infant was six months of age. A point biserial correlation coefficient was obtained for each independent variable.

All 14 independent variables were treated independently in the intercorrelational matrix. Later, the 14 variables were grouped into the following four categories: 1) one measure of hospital visitations by the support network family members, 2) three measures of the mother's accessibility to her support network, 3) five measures of actual support network resources, and 4) five measures of the mother's perceptions of her social support. Based on regression models, these 14 variables were tested to see if there was a significant association between them and the two dependent variables. The intercorrelational matrix is shown in Table 24.

Several high correlations were obtained. The two dependent variables had a correlation of .62 which reflected relatively high and consistent measurement between the two tests. The researcher was satisfied that the testing of the infants in the developmental clinic was done in a reliable and consistent manner.

The researcher hoped to find relatively high correlations among the independent variables that were grouped together theoretically. For example, the researcher hoped to find a negative high correlation between the availability of a car and the mother's estimation of how difficult it is to get out. However, a correlation of .14 was obtained. The four control variables were deleted from further analysis because of their low and nonsignificant correlations with the two dependent variables, MDI and PDI. The relatively low correlations obtained among some of the variables in this study may be attributed to a small number of subjects, lack of range or variation in the mothers' ages and years of education, and relative homogeneity in the infants' birthweights.

Hypothesis I

Hypothesis I stated that no significant linear relationship existed between measures of in-hospital visitation by the support network and the MDI and PDI scores of the infants at 12 months of age.

The results of this linear regression analysis yielded a very small R^2 for both the MDI and PDI variables. The F-values were not significant. There does not appear to be a significant relationship between in-hospital communication efforts by the support network and the Bayley Scores of Mental and Psychomotor Development at 12

months of age. The findings of this particular analysis are limited by a relatively small number of subjects. However, the findings suggest that no relationship exists between in-hospital communication efforts by members of the infants' support networks and the Mental and Psychomotor Development scores on the Bayley Scales of Infant Development at 12 months of age.

Hypothesis II

The second hypothesis stated that there was no significant linear relationship between measures of the mother's accessibility to her support network and her infant's scores on the Bayley Scales of Infant Development, Mental and Psychomotor Index.

Again, regression models were tested to determine if a significant relationship existed. The three measures of accessibility to support were grouped to form a multiple correlation coefficient. The results of this analysis failed to reject Hypothesis II. There was no significant linear relationship between measures of the mother's accessibility to her support network and her infant's scores of development on the Bayley Mental and Psychomotor Index at 12 months of age.

Hypothesis III

Hypothesis III tested the relationship between the measures of the adolescent mother's actual support and her infant's scores on the Bayley MDI and PDI at 12 months of age. The same regression procedures were followed as for the first two hypotheses. A simple regression model was run which included only the measures of actual support as related to the MDI and PDI scores on the infants at 12

months of age. The association of these five measures of the mother's actual support network with the scores attained on the Mental and Psychomotor Development Index by her infant at 12 months of age does not appear to be a significant one.

Hypothesis IV

Hypothesis IV stated that no significant relationship existed between measures of the adolescent mother's perceptions of her support network and her infant's scores on the Bayley Scales of Infant Development, Mental and Psychomotor Index, at 12 months of age. The same regression analysis was conducted for this hypothesis as was done for the previous ones.

The five measures of the mother's perception of her support network were grouped to obtain a multiple correlation coefficient. As seen in Table 30, the F-value obtained from the regression analysis of the measures of perception of support with the MDI scores was 1.17, which was not significant. Therefore, Hypothesis IV, as related to the MDI scores, was not rejected.

The regression analysis of the five measures of perception of support with the PDI scores did yield a significant F-value. An F-value of 4.02, significant at the .01 level, was obtained. In studying the Type I and Type IV Sums of Squares in this regression analysis, two variables yielded significant F-values. The Type I Sums of Squares included two variables with F-values significant at the .01 level. These were 1) ENSUPP, a measure of the mother's perception of the adequacy of her support network, and 2) OVWH, a measure of

the mother's perception of being overwhelmed by household tasks and childrearing responsibilities.

As discussed in Chapter IV, the Type I Sums of Squares was of interest because it measured incremental sums of squares for the regression model as each of the five variables was added. In this case, the addition of the variable ENSUPP to the regression model already including the variable of GETMH and SUFTIM, yielded an incremental sums of squares which resulted in an F-value of 7.13, significant at the .01 level.

The addition of the variable OVWH to the above model which contained the first three variables--GETHM, SUFTIM, and ENSUPP--also yielded an incremental sums of squares that resulted in an F-value of 7.53, also significant at the .01 level.

Type IV Sums of Squares yielded only one significant F-value. The variable, OVWH, a measure of the mother's perception of being overwhelmed by household tasks and childrearing responsibilities, yielded an F-value of 6.35, significant at the .02 level of significance. Type IV Sums of Squares was a measure of sums of squares due to adding the variable OVWH last in the model. The results indicated that the addition of OVWH to the regression model last resulted in an F-value of 6.35, significant at the .02 level. The addition of each of the other four variables to the model last did not result in significant F-values.

In summary, the regression analysis of the five measures of the mother's perceptions of her support network with her infant's PDI scores at 12 months of age resulted in an F-value significant at the .01 level. Therefore, Hypothesis IV, as related to PDI scores, was

rejected. There is a significant relationship between the adolescent mother's perceptions of her support and her infant's score on the Bayley Scale of Infant Development, Psychomotor Index.

More specifically, the measure of the mother's perception of being overwhelmed by household tasks and childrearing responsibilities was significant at the .05 level for both Type I and Type IV Sums of Squares. The mother's perception of her support network was also significant at the .01 level in the Type I Sums of Squares.

These findings suggest that an adolescent mother's perception of the adequacy of her support system may play a critical role in how she feels about her parenting role. If indeed a mother's perception of her support system does play such an important role, then further research is surely indicated to better understand what factors impact the mother's perception of the adequacy of her support. Absolute numbers of individuals or resouces available for support may be less critical than the quality of support provided the young mother, perhaps by only a few resources. Clearly, this finding merits future study. It would be interesting to look at this variable-perception of support--in relationship to self-esteem measures and locus of control--measures. Does the mother who perceives her support to be adequate have stronger internal locus of control? This question needs further study.

Stepwise Regression Analyses

The stepwise regression procedure, known as Max-R, produced a series of "best" models in terms of accounting for the variances of the Mental Development Index and the Psychomotor Development Index

scores. The best one-variable model was "enough support," which is a measure of the mother's perception of the adequacy of her support. This model is of interest because, out of all the possible predictor variables, "enough support" was the one variable that accounted for the greatest amount of variance of the two dependent variables. This model also supports the findings in Hypothesis IV: there appears to be a significant association between the mother's perception of her support and the qualitative psychomotor development of the infant.

Other "best" models were produced. The best two-variable model included the variables "number of hospital visits by the family" and "mother's happiness in general." These two variables, along with "mother's self-concept--physical," comprised the best three-variable model.

The remaining best models reported in the results chapter of this study utilized these three variables as the foundation, with more variables being added for each best model. It is interesting to note that the variables that fell into the best models primarily included those from the categories of 1) mother's perception of her support system and 2) mother's self-concept.

While this Max-R stepwise procedure is of interest, a more rigorous stepwise procedure can be accomplished. This procedure is now presented.

The second stepwise regression procedure consisted of identifying those independent variables which made a significant contribution to the variance of MDI and PDI scores, the two dependent variables, at the .15 level of significance. For both MDI and PDI, the only predictor variable that met this criterion was "enough support," the

young mother's perception of the adequacy of her support network. This finding reinforces previous results that indicate the mother's perception of her support system may be as important as actual measures of the support system.

Summary

An exploratory study was conducted to determine if a relationship might exist between measures of support network resources of single adolescent mothers and the qualitative development of their high-risk infants at 12 months of age, as measured by the Bayley Scales of Infant Development.

A multiple linear regression procedure was utilized. Four primary hypotheses were studied utilizing simple linear regression models. Three of the four hypotheses were not rejected. The fourth hypothesis, as related to the relationship between the mother's perceptions of her support and her infant's score on the Bayley Scale of Infant Development, Psychomotor Index, at 12 months of age, was rejected. There is a significant relationship between the mother's perception of her support and her infant's score on the Psychomotor test.

Stepwise regression procedures resulted in the identification of one independent variable as being the best predictor variable. This variable was a measure of the young mother's perception of the adequacy of her support system.

Further research was indicated, especially in relation to the finding in Hypothesis IV, which indicated that the mother's perception of her support network may be a significant factor in the quality of her child's development.

Findings As Related to the Literature

The infant subjects in this study presented more positive cognitive and psychomotor outcomes than did infants born to adolescent mothers as reported in studies by Field (1981), Holstrum (1979), Quay (1981), and Oppel and Royston (1971). The average birthweight of the infant subjects in this study was 1415 grams, clearly in the "at risk" classification, as described by Quay (1981) and Oppel and Royston (1971). The MDI scores averaged 109.5, slightly above average. The PDI scores averaged 99.4, an average score for normal population infants.

The average age of the adolescent mothers in this study was 17.7 years. This relatively high and homogeneous maternal age level may have contributed to the more positive developmental outcomes of their infants at 12 months of age. However, Broman (1981) stated that such factors as socioeconomic status played an important role in neonatal outcome, not just maternal age.

Measures of social support of these adolescent mothers and their infants indicated that social support was provided primarily by members of the immediate family and very close friends, all of whom lived in the immediate geographic area.

The concept of family networks and kinship support has been studied extensively by sociologists Buckley (1967), Adams (1970), Sussman and Burchinal (1962), and Keniston (1977). The field of sociology acknowledges the role of family support as being critical in healthy family functioning.

Additionally, Bronfenbrenner (1974), Cochran and Brassard (1979), and Powell (1979) all proposed recent theories which linked quality family support with quality child development. Bronfenbrenner (1979) proposed a theory of ecological human development that delineated specific ways in which the parent's social network impacted the child's growth and development.

Infants in this study received an average of ten visits from family members while they were hospitalized immediately after birth. With an average hospital stay of 31 days, this meant that infants were visited regularly and frequently during their hospitalization.

Most of the mothers reported that such social supports as accessibility to a car and a telephone were available to them. However, nearly 60 percent also reported that it was difficult for them to get out when they needed to. Most of the mothers reported having adult family members or close friends who lived in the area. Only 4 of the 35 subjects reported having none. These data supported previous research that indicated that families interact and provide support on a regular basis (Adams, 1970; Sussman and Burchinal, 1962).

Research linking social support to such dependent variables as abuse (Garbarino, 1976), mortality rate (Berkman and Syme, 1979), utilization of medical facilities (McKinlay, 1973), and help-seeking (Gourash, 1978) has been helpful in furthering our understanding of the role of social support in human development. Cobb (1976) concluded from his research that social support was a moderator of life stress. Tolsdorf (1976) studied social support and mental health and concluded that psychiatric subjects had less social network support.

Network mobilization was avoided by more psychiatric subjects while the control subjects (nonpsychiatric) relied on it.

In summary, the subjects in this study experienced rather positive levels of social support, as indicated by hospital visitation, accessibility to transportation and communication channels, adult family members and friends who lived nearby, and the frequency of interaction with these support system members.

Adolescent mothers' self-concepts as related to support were studied by Colletta, Hadler, and Gregg (1981). Internal locus of control was related directly to active coping responses. Held (1981) found that black adolescent mothers who kept their babies and who attended a day school for pregnant mothers had higher self-esteem measures than did mothers who did not attend a school for pregnant mothers.

In this study, mothers rated themselves rather positively on self-measures of health, weight, well-being, and happiness in general. Most of the mothers reported feeling overwhelmed by household tasks and childrearing responsibilities. At the same time, they also reported feeling that they had adequate support. The regression analysis resulted in only one significant finding. The mother's perception of her support contributed significantly to the variance of the PDI scores. Other measures of actual support were not significantly associated with the two dependent variables.

The findings of this study, along with those of Colletta, Hadler, and Gregg (1981) and Held (1981), suggested the need to study self-concept of adolescent mothers in relation to locus of control and perception of support.

Recommendations for Future Research

This descriptive study raised questions for further study. Because there were 35 mother-infant dyads in this study, there are limitations to the generalizability of the findings. Generalizations should be directed to similar populations of mother-infant dyads who are served by such a clinic as the Children's Developmental Clinic at Shands Teaching Hospital, University of Florida. The results of this suggest that there may be an association between the young mother's perception of her support network and the development of her infant. Measures of support resources did not show a significant association with the development of the infant in most of the hypotheses tested.

Questions for further investigation include the following:

1) Is there a significant difference in the qualitative development of infants born to adolescent mothers under the age of 16 in relationship to measures of social support?
2) What factors may interact with social support measures that may impact the qualitative development of infants born to very young mothers?
3) Is the feeling of isolation more common among adolescent mothers who vary according to race, age, and SES?
4) What variables affect the adolescent mother's perceptions of the adequacy of her social support?
5) Is there a relationship between the adolescent mother's perception of her social support and measures of her internal locus of control?

6) Is there a relationship between the adolescent mother's perception of her social support and her self-esteem?
7) Is there a relationship between the degree of organizational involvement and the rate of adolescent pregnancy?
8) Is there a relationship between the degree of neonatal complications and the adolescent mother's feelings of being overwhelmed with parenting responsibilities?

Further recommendations for future research include using experimental methodology which would allow the investigation of cause and effect relationships between dependent and independent variables. Control groups might be obtained and the use of a large study sample is suggested. Experimental methodology does have limitations in the study of social support, however. This researcher has chosen to study measures of social support of adolescent mothers in an ex post facto manner. In this researcher's opinion, social support is studied most authentically when left intact. This researcher does not advocate the manipulation of a variable such as social support. Indeed, the major studies cited in the literature on social support have been primarily ex post facto and correlational in design. These correlational studies included those done by Berkman and Syme (1979); Colletta, Hadler, and Gregg (1981); Garbarino (1976); Held (1981); Stevens (1981); McKinlay (1973); and Swick, Brown, and Watson (1980). The above studies utilized ex post facto data in a correlational way in order to investigate associations between measures of social support and such dependent variables as mortality rate, self-esteem, abusive behavior, stress moderation, perception of neighborhood, and utilization of medical facilities.

A final recommendation would be the use of ethnographic methods in order to more completely understand why support networks relate to measures of child development. Greater study of detail and a more refined research approach to questions of interest might be attained through ethnography. Case studies which focused in great depth on the lifestyles of a few representative adolescent mothers would be helpful in better understanding social support resources which are available and utilized by this growing population.

Implications for Parent Education

Stevens (1981) suggested that many parent education programs have been developed without serious study or sensitivity to the context of the lives of the parents involved. Stevens advocated the use of informal educational avenues in order to reach the growing numbers of adolescent parents.

The results of this study indicated that a young mother's perception of her support network resources was related to the quality of her infant's physical development. Therefore, parent education or intervention programs should focus on what factors affect the young mother's perception of her support and then develop objectives that strengthen and enhance her relationship with her support system. The results of this study suggested that Bronfenbrenner's (1979) theory of ecological human development helps to explain the parenting needs of adolescent mothers. Adolescent mothers do not cope successfully in a social vacuum. They have--and apparently need--a sense of connectedness with the members of their support networks. How

positively the young mother views this support system adequacy may influence her parenting attitudes and, in turn, her parenting skills.

Conclusions

As the research on adolescent pregnancy and parenting becomes more refined, a better understanding of the complexity of this societal issue should be attained. Methods of studying this population are improving as researchers seek to utilize appropriate research tools for the many questions being uncovered. This population is a particularly challenging one to study. Young single mothers are typically less verbal than their older counterparts, making certain qualitative approaches more difficult to conduct. However, this researcher believes that dual approaches which combine qualitative and quantitative methods of study may provide the most thorough and accurate means of studying this population.

This study of the relationships between measures of social support network resources and the development of the infants born to these adolescent mothers has raised questions for further research. The need for continued research on adolescent pregnancy and parenting is imperative if society is to better understand and be responsive to the needs of this growing population. Further understanding of the support mechanisms utilized by adolescent mothers may lead to new and more effective means of parenting intervention.

APPENDIX
QUESTIONNAIRE

(Taken from the parent questionnaire administered to the mothers of infants being assessed in the Children's Developmental Clinic, Shands Teaching Hospital, University of Florida. These data were collected at the six month evaluation of the infant.)

26. Do you own or have access to a car? YES NO

27. Is it easy/difficult for you to get out and do what you need to do?

    1. very difficult
    2. somewhat difficult
    3. depends
    4. somewhat easy
    5. very easy

    YES = 1, 2, or 3 NO = 4, 5

28. Do you own or have access to a telephone? YES NO

29. How many relatives and/or friends live around your area? (adults)_____

30. How many of these can you count on in times of real need (crisis)? _____

31. Do you get together with relatives or friends often? YES NO

32. How many times a week?

    1 = never
    2 = rarely, up to once every few months
    3 = sometimes, a few times a week to once a week
    4 = often, a few times a week
    5 = very frequently, every day

    OFTEN = 3, 4, and 5 NOT OFTEN = 1 and 2

33. Do you belong to any organizations, such as social _____ religious_____ educational_____ or political _____?

    Indicate the number of each kind of organization. Total = _____

34. Does your present situation provide you with enough or not enough of the emotional support you want?

    1 = enough
    2 = sometimes, sort of
    3 = not enough
    4 = not at all

    YES = 1 and 2 NO = 3 and 4

35. Do you feel you're overwhelmed with household tasks and children? How often do you feel this way?

    1 = never
    2 = infrequently
    3 = sometimes
    4 = often
    5 = all the time

    NO = 1 and 2 YES = 3, 4, and 5

36. How many times a month do you get away by yourself to do something you would like to do? _____

37. Do you think this is enough time?

    1 = not enough
    2 = enough
    3 = too much

    NO = 1 YES = 2 and 3

38. On the whole, would you describe your present living situation as happy or unhappy?

    1 = very unhappy
    2 = somewhat unhappy
    3 = neutral
    4 = somewhat happy
    5 = very happy

    NO = 1, 2, and 3 YES (happy) = 4 and 5

For the items below, circle the number which best describes you.

39. How would you rate your health in general?

    Excellent 1 2 3 4 5 6 7 Poor

40. How would you rate your physical fitness?

    Excellent 1 2 3 4 5 6 7 Poor

41. How would you rate your body shape?

Excellent 1 2 3 4 5 6 7 Poor

42. How would you rate your weight?

Excellent 1 2 3 4 5 6 7 Poor

43. How satisfied are you with your life in general?

Very Satisfied 1 2 3 4 5 6 7 Disappointed Could be better

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BIOGRAPHICAL SKETCH

Dolores Ann Hoffman Stegelin was born May 16, 1947, in Salina, Kansas, growing to adulthood on a dairy farm in central Kansas. She attended schools in rural Dickinson County and was an honor student at Chapman High School, Chapman, Kansas.

In 1965, Dolores began her undergraduate work at Kansas State University. Active in numerous honoraries and organizations, she graduated magna cum laude in 1969 with a B.S. degree in home economics education. Selected as the General Foods Fellow at Kansas State University in 1969, she completed her master's degree in family relations and child development at Kansas State in 1970.

Dolores' professional experiences include college instruction at California State University-Sacramento; Oscar Rose Junior College, Midwest City, Oklahoma; and Santa Fe Community College, Gainesville, Florida. Mrs. Stegelin pursued her doctoral work in early childhood education at the University of Florida from 1979-1982. Her area of special interest was infant development and parent education.

On June 1, 1982, Dolores assumed the position of Family Life Education Specialist for the Texas Agricultural Extension Service, Texas A & M University. She writes curriculum materials and does statewide programming in Child and Adolescent Development and Family Relations. She is married to Dr. Forrest E. Stegelin and has two children, Stephen and Amber.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Linda L. Lamme, Chairman
Associate Professor of General
Teacher Education

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Associate Professor of General
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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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This dissertation was submitted to the Graduate Faculty of the Division of Curriculum and Instruction in the College of Education and to the Graduate Council, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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Dean for Graduate Studies and Research

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